
**Dudek and Associates, Inc., "2005 Sensitive Plant Survey Results for the
Entrada [Magic Mountain Entertainment] Site, Los Angeles, California"
(October 2006; 2006G)**



2005 Sensitive Plant Survey Results

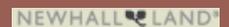
Entrada

Los Angeles County, California



J U N E 2 0 0 6

PREPARED FOR:
The Newhall Land and Farming Company
23823 Valencia Blvd.
Valencia, CA 91355



PREPARED BY:
Dudek & Associates, Inc.
605 Third Street
Encinitas, CA 92024



2005 Sensitive Plant Survey Results

for the

Entrada Site Los Angeles County, California

Prepared for:

Newhall Land

23823 Valencia Boulevard
Valencia, CA 91355
Contact: Glenn Adamick

Prepared by:

DUDEK

605 Third Street
Encinitas, CA 92024
Contact: Sherri L. Miller
(760) 479-4244

June 2006

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1.0 INTRODUCTION

The purpose of this report is to document the results of surveys for sensitive plant species within the 550-acre Entrada Site for the 2005 field season. Surveys placed an emphasis on the identification of populations of the state-listed endangered San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; SFVS). Any additional sensitive plant species observed were noted.

2.0 SITE DESCRIPTION

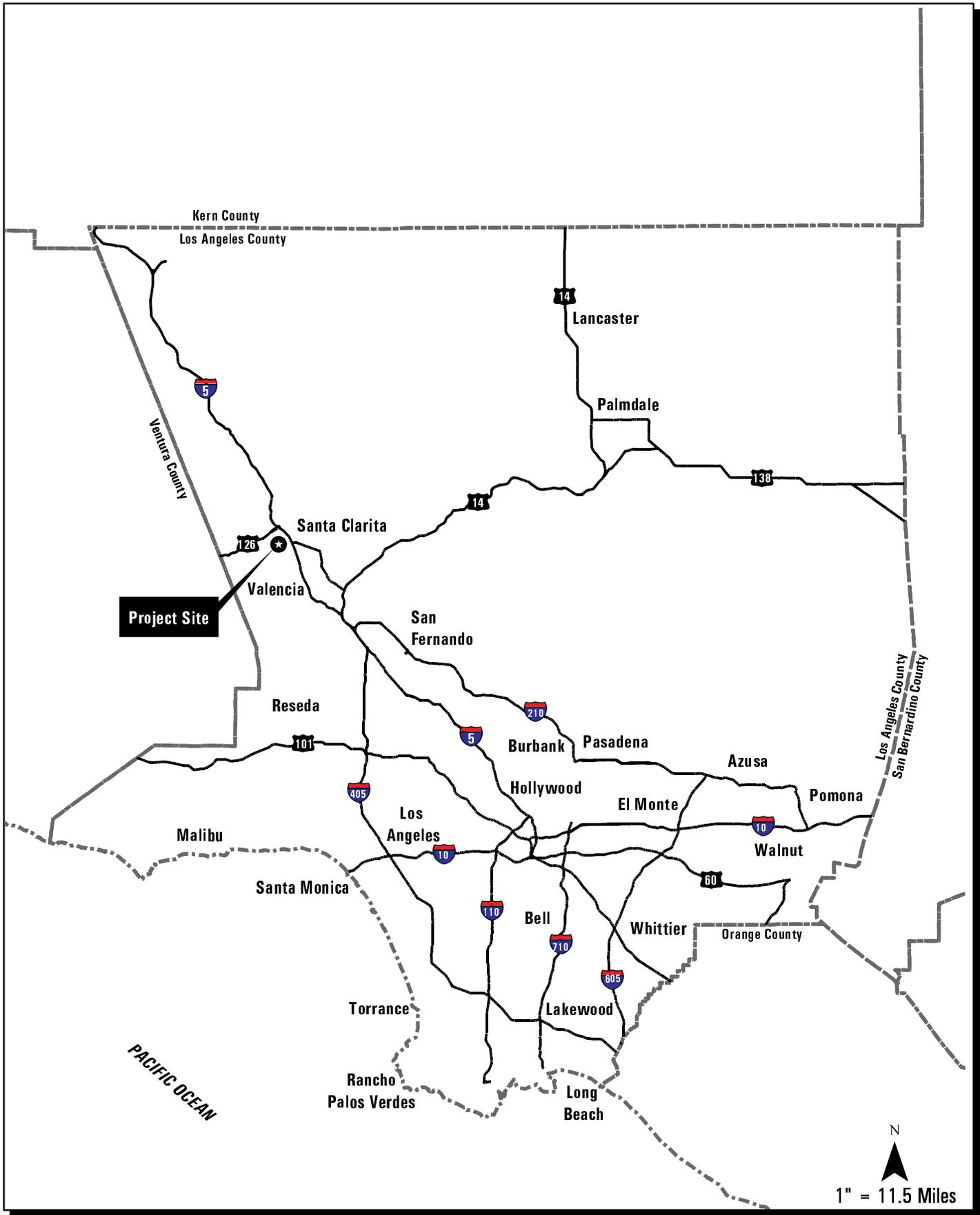
The 550-acre Entrada site is located in an unincorporated portion of the Santa Clara River Valley in northwestern Los Angeles County (*Figure 1*). The Entrada site lies just west of Interstate 5 (I-5) and south of the Santa Clara River. The City of Santa Clarita is immediately east of the project site on the other side of I-5 (*Figure 2*).

The southern portion of the Entrada site is dominated by several north/south trending ridges. A narrow panhandle (roughly 100 meters wide) extends along the western portion of the site to an agricultural field adjacent to the Santa Clara River. The northeastern portion of the site contains a large agricultural field with fragments of relictual oak woodlands and California sagebrush and California buckwheat scrub. Site elevations range from approximately 1,000 feet above mean sea level (AMSL) along the Santa Clara River to approximately 1,550 feet AMSL on the ridges in the southwestern portion of the site (*Figure 2*).

Slope gradients range from moderate to very steep in the hillside areas to very gentle adjacent to the Santa Clara River, tributary canyons and associated mesas. Distinctive geographic features include the north/south trending ridges on the southern portion of the site; a wash that drains north through the site to a concrete-lined drainage channel that passes through the Six Flags Amusement Park; and the Santa Clara River on the northwestern portion of the site.

2.1 Plant Communities and Land Covers

Native and naturalized habitats within the Entrada site are representative of those found in this region and provide examples of those plant communities found in the Santa Susana Mountains and the Santa Clara River ecosystems. California sagebrush, California buckwheat, purple sage, big sagebrush, chamise and mixed chaparrals, Valley oak, and California grasslands series are the major upland plant communities on the site. Ephemeral drainages onsite provide habitat for alluvial habitats including big sagebrush series and scalebroom series. The northeast portion of



Entrada
Regional Map

FIGURE
1

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the site includes an agricultural field with some intact upland habitats. While upland habitats dominate the landscape within the site, the Santa Clara River is immediately adjacent to it and supports a variety of riparian plant communities. These include Fremont's cottonwood, arroyo willow, black willow, mule fat, arrow weed, and cattail series.

Newhall Land (Newhall) leases out portions of the site for oil and natural gas production, as well as for cattle grazing and agricultural operations. Grazing activities have had a noticeable effect on much of the natural habitat onsite. Scrub habitats have been displaced by non-native grasslands, apparently as a result of grazing. Southern California Edison and Southern California Gas Company have transmission lines within easements along the southern portion of the site as well. The easements/transmission lines are actively maintained.

2.2 Geology and Soils

Geologically, the site is located within the Transverse Range geomorphic province of southern California in the eastern portion of the Ventura depositional basin. This basin “was produced by tectonic downwarping in the geologic past to produce a large-scale synclinal structure in which a thick sequence of Cenozoic sediments has accumulated. These sediments have been lithified into a sequence of sedimentary rock that has subsequently been uplifted, tilted, and tectonically deformed (Allan E. Seward 2002, 2004).” They are cut by segments of the Del Valle and Salt Creek faults. Bedrock formations found in the area include the Modelo, Towsley, Pico, Saugus, and Pacoima formations, as well as Quaternary Terrace deposits. Surficial deposits include Quaternary alluvium, slopewash, soil, and artificial fill (Allan E. Seward 2002, 2004).

3.0 METHODS AND SURVEY LIMITATIONS

Data regarding botanical resources present on the project site were obtained through a review of the pertinent literature and field reconnaissance, which is described below.

3.1 Literature Review

General floristic and sensitive botanical resources present or potentially present on the Entrada site were identified through a literature search using the following sources: the California Natural Diversity Database for the Newhall, Santa Susana, Oat Mountain, Mint Canyon, San Fernando, Green Valley, Warm Springs Mountain, Whitaker Peak, Cobblestone Mountain, Piru, Simi, Thousand Oaks, and Val Verde quadrangle maps (CDFG 2004b); 2002 and 2003 Sensitive Plant Survey Results for Newhall Ranch Specific Plan Area (Dudek 2002, 2004a); 2003 Sensitive Plant Survey Results for Valencia Commerce Center, Castaic Mesa, Isola and Ventura

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Homestead Sites, Magic Mountain Entertainment Center/Entrada Site, Castaic Junction Site, and Salt Creek (Dudek 2004b-g); 2004 Sensitive Plant Survey Results for Valencia Commerce Center, Entrada Site, Legacy, and Newhall Ranch Specific Plan Area (Dudek 2004h-k); *Biological Resource Assessment of the Proposed Santa Susana Mountains/Simi Hills Significant Ecological Area* (PCR, November 2000); CalFlora (University of California, Berkeley, May 2002); U.S. Fish and Wildlife Service (USFWS 1999); California Department of Fish and Game (CDFG 2002); *Inventory of Rare and Endangered Plants of California* (CNPS 2001); *Vascular Flora of the Liebre Mountains, Western Transverse Ranges, California* (Boyd 1999); *Checklist of Rare Ventura County Plant Species* (Magney 2002); *A Flora of the Santa Barbara Region, California* (Smith 1976); *A Flora of the Santa Monica Mountains* (Raven et al. 1986); *Biology of the San Fernando Valley Spineflower, Ahmanson Ranch, Ventura County, California* (Glenn Lukos Associates, Inc. and Sapphos Environmental, Inc. 2000); *Report to the Fish and Game Commission on the Status of San Fernando Valley Spineflower* (CDFG 2001); *Biota Report, Newhall Ranch Specific Plan* (RECON and Impact Sciences, Inc. 1996); and herbarium specimens from Rancho Santa Ana Botanic Garden (RSA) and the University of California, Riverside (UCR) Herbarium. General information regarding vegetation communities was obtained from Holland (1986) and Sawyer and Keeler-Wolf (1995). Plant species nomenclature follows Hickman (1993).

3.2 Field Reconnaissance Methods

Botanical surveys for sensitive plant species were conducted by Dudek & Associates, Inc. (Dudek) staff biologists Colin Khoury, Kamarul Muri, Chris Oesch, Scott Boczkiewicz, Sparrow Serrano, Michelle Balk, Dave Flietner and Rebekah Krebs. All surveys were conducted on foot. Resumes for survey personnel are provided in *Appendix A*.

Botanical surveys of the site were conducted in April 2005 in accordance with the schedule provided in *Table 1*. Approximately 320 person-hours (32 person-days) were spent conducting botanical surveys within the study area. Surveys were conducted in teams of two or more biologists, with at least one senior-level biologist included with each team. Biologists were able to observe reference populations of the state-listed endangered SFVS and other sensitive plant species in order to develop a search-image prior to conducting surveys of the project site. Surveys focused on the identification and location of SFVS. Additional sensitive plant species observed during SFVS surveys, including California Native Plant Society (CNPS) List 1B and 4 species, were also recorded.

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TABLE 1
Survey Schedule and Personnel Entrada Site

Date	Biologists	Purpose
4-18-05	Colin Khoury, Kamarul Johari Muri	Focused surveys for SFVS; other sensitive plant species noted as observed.
4-19-05	Colin Khoury, Kamarul Johari Muri	Focused surveys for SFVS; other sensitive plant species noted as observed.
4-20-05	Colin Khoury, Kamarul Johari Muri, Scott Boczkiewicz	Focused surveys for SFVS; other sensitive plant species noted as observed.
4-21-05	Colin Khoury, Kamarul Johari Muri, Scott Boczkiewicz, Sparrow Serrano	Focused surveys for SFVS; other sensitive plant species noted as observed.
4-25-05	Chris Oesch, Colin Khoury, Dave Flietner, Michelle Balk, Rebekah Krebs	Focused surveys for SFVS; other sensitive plant species noted as observed.
4-26-05	Chris Oesch, Colin Khoury, Dave Flietner, Michelle Balk, Rebekah Krebs	Focused surveys for SFVS; other sensitive plant species noted as observed.
4-27-08	Chris Oesch, Colin Khoury, Dave Flietner, Michelle Balk, Rebekah Krebs	Focused surveys for SFVS; other sensitive plant species noted as observed.
4-28-05	Chris Oesch, Colin Khoury, Dave Flietner, Michelle Balk, Rebekah Krebs	Focused surveys for SFVS; other sensitive plant species noted as observed.
4-29-05	Colin Khoury	Focused surveys for SFVS; other sensitive plant species noted as observed.

All plant species encountered during the field surveys were identified and recorded for inclusion in *Appendix B*. Latin and common names of plants follow *The Jepson Manual* (Hickman 1993) or other recent published taxonomic treatments. Where not listed in Hickman (1993), common names were taken from Abrams (1923). Where not found in this reference, a variety of sources were used (*e.g.*, Dale 1986, or Roberts 1998).

Surveys for SFVS were focused in open areas of California sagebrush-purple sage, California buckwheat, California sagebrush and California annual grassland series (Sawyer and Keeler-Wolf 1995) on ridgelines, slopes, and escarpments with a southern, southwestern, or southeastern exposure. This strategy was based on information gathered during the documentation of SFVS populations flagged by CDFG; information gathered during past surveys by Dudek for SFVS populations on the Newhall Ranch project site (Dudek 2002, 2004a, 2004k) and adjacent project sites (Dudek 2004b-j); information contained in the report prepared by Glenn Lukos Associates, Inc. and Sapphos Environmental, Inc. (2000); the status report prepared for the Fish and Game Commission (CDFG 2000); and conversations with Rick Reifner, the botanist who re-discovered SFVS at Ahmanson Ranch in 1999.

While surveying in the field and mapping SFVS, a four-meter (m) rule was used to separate polygons for mapping purposes. This distance is a heuristic mapping tool based on the topography, vegetation, detectability of the plants, the general accuracy of the GPS, and time

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constraints. This heuristic criterion is not specifically tied to SFVS biology (*i.e.*, reproductive biology, seed dispersal) and thus is not intended to reflect reproductively isolated sub-populations, the total extent of the SVFS seed bank, or any other feature of the species life history.

The outer perimeter of each spineflower polygon was searched in one continuous direction until returning to the starting point, with plants being located within at least every one to four m along the boundary, and points were stored with a Trimble GPS (that has sub-meter accuracy) manually to form the boundaries of the polygon. GPS points were taken within at least every one to four m. The spineflower polygons were given unique identifiers (*i.e.*, numbers and/or letters) in the field. Field data sheets were completed for each of the spineflower polygons that include data on site conditions (*i.e.*, plant number estimates, associated species). Polygons were analyzed in the lab and delineated based on a four m minimum convex polygon rule (all polygons within four m of each other will be joined using GIS software (*e.g.*, ArcGIS, AutoCAD) and then delineated as one polygon with the outer boundary represented by a minimum convex polygon.

A modified magnitude scale was used to arrive at an estimate of the number of spineflower individuals (or other sensitive species when observed) within each polygon. After mapping the boundaries of the polygon, the number of individuals were counted/estimated in a rectangular “sample estimation area” (to account for the “clumped” nature of this species), which is a subset of the total polygon. The sample estimation area was between 200 centimeter² (cm²)(10 by 20 cm) and two m² (one m by two m) depending on various factors regarding the polygon (*e.g.*, size of the polygon, plant densities, variations in plant densities within the polygon). The number of subsets within the total polygon was determined and added/multiplied, resulting in a total estimate of the number of individuals of the polygon (*e.g.*, 4x125=500, 8x12=96, 9x100=900). This number was then rounded to the nearest magnitude or multiple of a magnitude (*e.g.*, 500; 100; 1,000).

Polygons for other sensitive species were mapped with the GPS unit, by drawing polygons directly onto a 200-scale (1”=200’) topographic map overlaid onto an aerial photograph (Psomas 2003, 2004), or by a combination of the two. Professional judgment and experience were used to delineate these polygons based on the detectability of the species, topography, and vegetation. Perennial sensitive plants were mapped at a 10 to 20 m scale due to their population dynamics (including seed dispersal and pollination range), observability, habit, habitat limitations, and mapping accuracy. Information regarding the mapping for each sensitive species is included in the sections below (*Sections 4.2.1 through 4.2.6*).

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3.2.1 Sensitive Plant Species

Sensitive plant species are those species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened population sizes. This includes those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates, those plant species found on Lists 1A, 1B or 2 of the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2001; *Inventory*) or CNPS online inventory (<http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>), and those plant species which are found on the list of “Threatened and Endangered Species and Species of Concern, Los Angeles County” ([http://www.losangelesalmanac.com/topics/ Environment/ev14b.htm](http://www.losangelesalmanac.com/topics/Environment/ev14b.htm)). CNPS List 3 or List 4 species were included in discussions only when incidentally encountered during the field surveys.

3.2.2 Survey Limitations

Surveys were conducted in the spring of 2005. The timing of the surveys was coincident with the blooming period for SFVS and other early blooming annual species. This maximized the potential for detection of SFVS during the survey effort.

Surveys for SFVS and other sensitive species were concentrated in areas of suitable habitat. Surveyors recorded sensitive plant species if they were observed during SFVS surveying. Surveys for SFVS were concentrated on south-facing slopes. All surveys were conducted during daylight hours under weather conditions which did not preclude observation of sensitive plant species (*e.g.*, surveys were not conducted during heavy fog or rain).

4.0 RESULTS OF SURVEYS

4.1 Botany – Floral Diversity

The site is situated at the nexus of the Transverse, Coast, and Sierra Nevada ranges; the Mojave Desert; and coastal plains (Hickman 1993). Ecotone areas such as this are often characterized by higher biological diversity than similar-sized areas within the core of a physiographic region (Boyd 1999). As such, a high diversity of plant species is expected during a year of at least average rainfall amounts for the area.

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A total of 356 plant species were identified within the Entrada site. Of these, 269 species (75%) are native to the region and 87 species (25%) are non-native. The cumulative list of plant species identified on the site in 2002, 2003, 2004, and 2005 is provided as *Appendix B*.

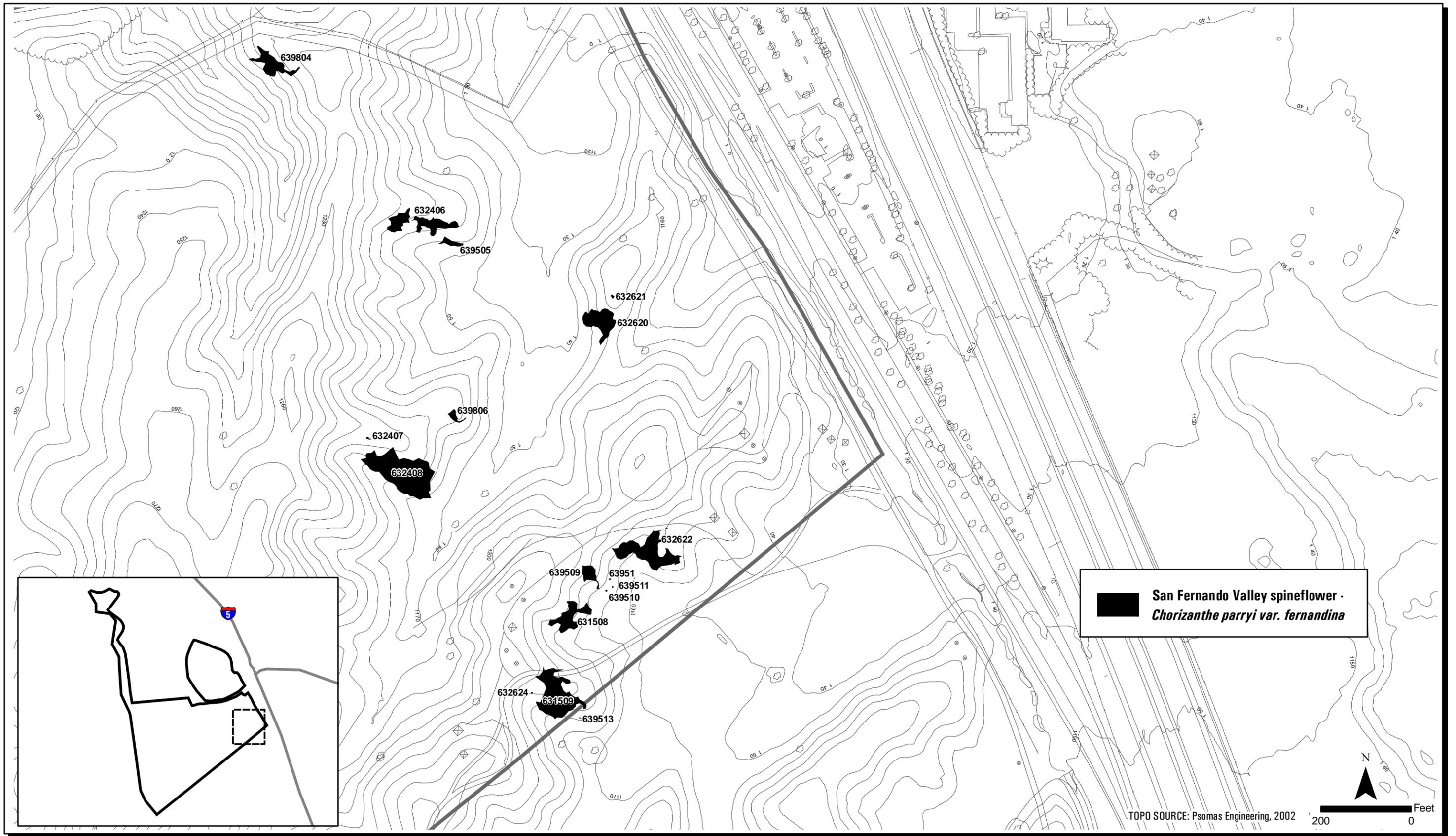
4.2 Sensitive Plant Species

Sensitive plant species observed within the study area during the course of 2005 surveys include: SFVS, slender mariposa lily (*Calochortus clavatus* var. *gracilis*), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), Peirson's morning glory (*Calystegia peirsonii*), southern California black walnut (*Cercocarpus betuloides* var. *blancheae*) and island mountain-mahogany (*Cercocarpus betuloides* var. *blancheae*). These and other sensitive species that have the potential to occur on the Entrada site, based on the presence of suitable habitat and soils, are listed in *Table 2*. This list is confined primarily to those species listed by the state and federal government as threatened or endangered, those species proposed for state and/or federal listing or candidates, those plant species found on Lists 1A, 1B, or 2 of the CNPS *Inventory of Rare Endangered Plants of California* (CNPS 2001) or CNPS online inventory (<http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>).

Those species that were observed during the 2005 field surveys are discussed in greater detail below. A number of species found on CNPS Lists 3 or 4 also have the potential to occur onsite (e.g., *Acanthomintha obovata* ssp. *cordata*, *Calochortus catalinae*, *C. clavatus* var. *clavatus*, *Mucronea californica*); however, due to their relatively low sensitivity level, they are only discussed in the following sections if observed onsite. *Figures 3* through *5* show the distributions of SFVS onsite. *Figures 6* and *7* show the distribution of slender mariposa lily.

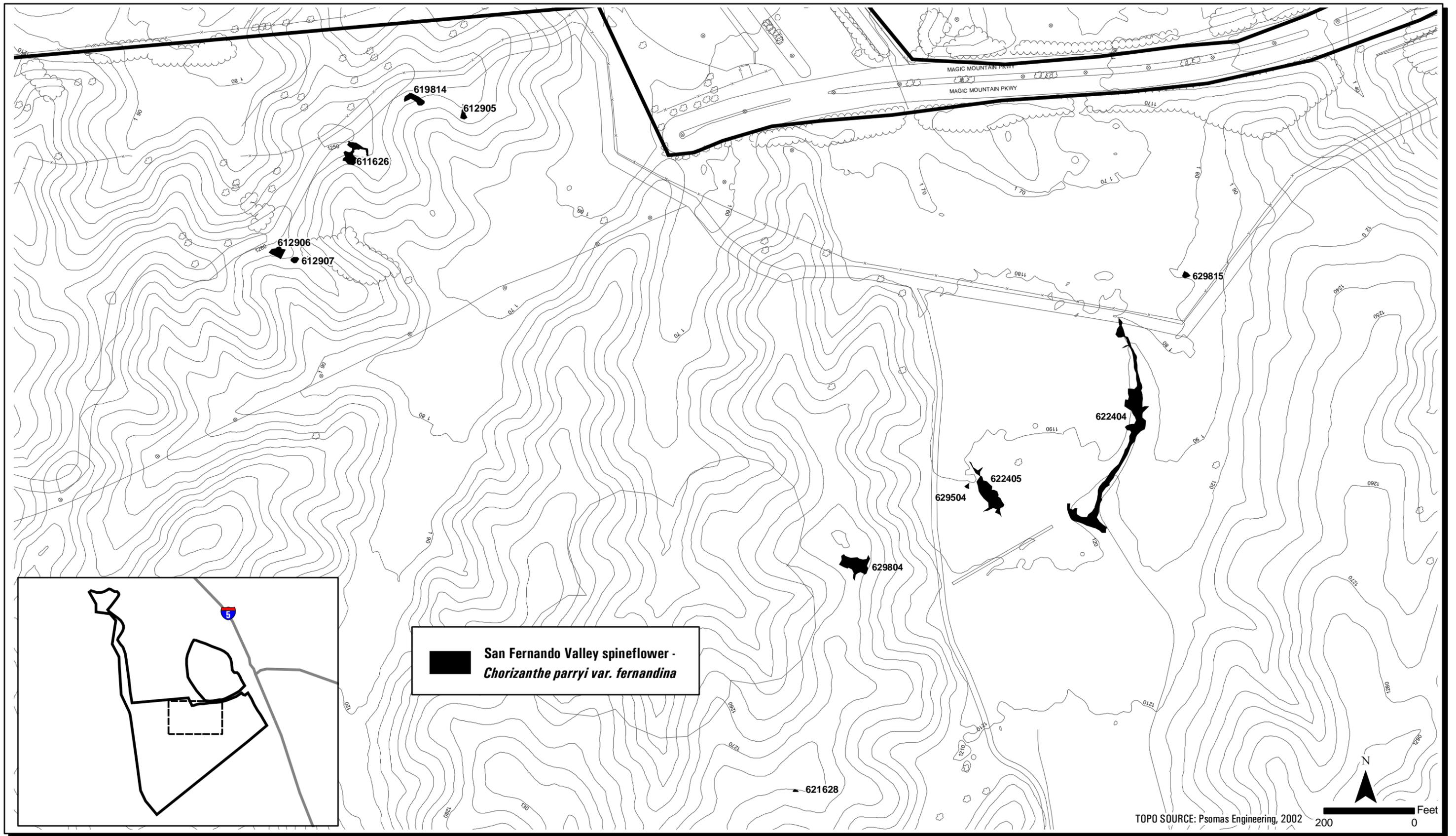
4.2.1 San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)

San Fernando Valley spineflower is state-listed as endangered, a candidate for federal listing, and a CNPS List 1B species. Until its rediscovery in 1999 at Laskey Mesa on Ahmanson Ranch in Ventura County, it was thought to be extinct. A review of information of historic occurrence of SFVS in the California Natural Diversity Database (CNDDDB) indicate that it was previously thought to occur in sandy to gravelly soils of washes, riverbeds, and upland areas primarily on the margins of the San Fernando Valley at the base of the Santa Susana Mountains, San Gabriel Mountains, and the Simi Hills. Munz (1974) provides distribution information to include Orange and San Diego counties.



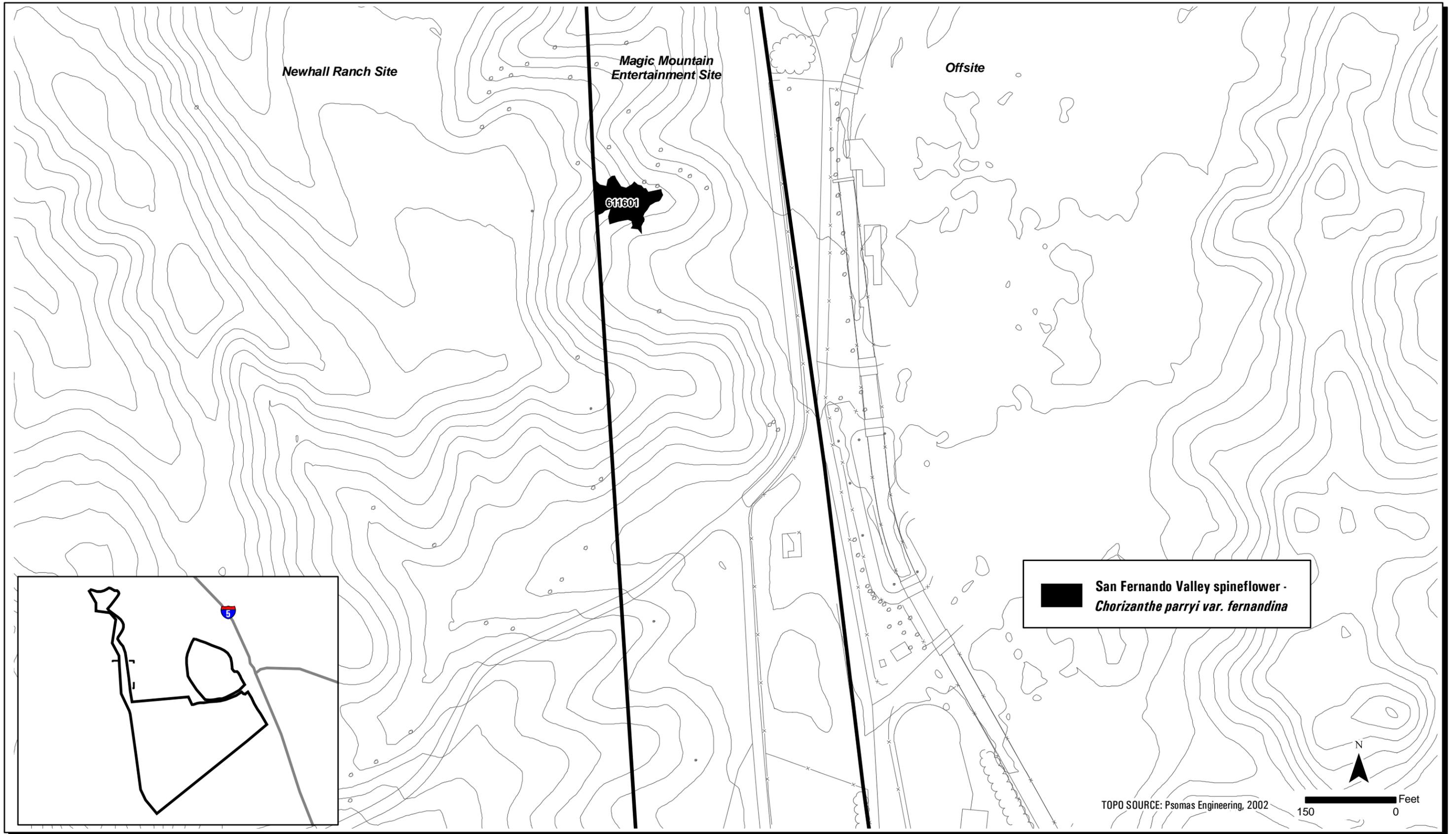
Entrada
2005 San Fernando Valley spineflower Results

FIGURE
3



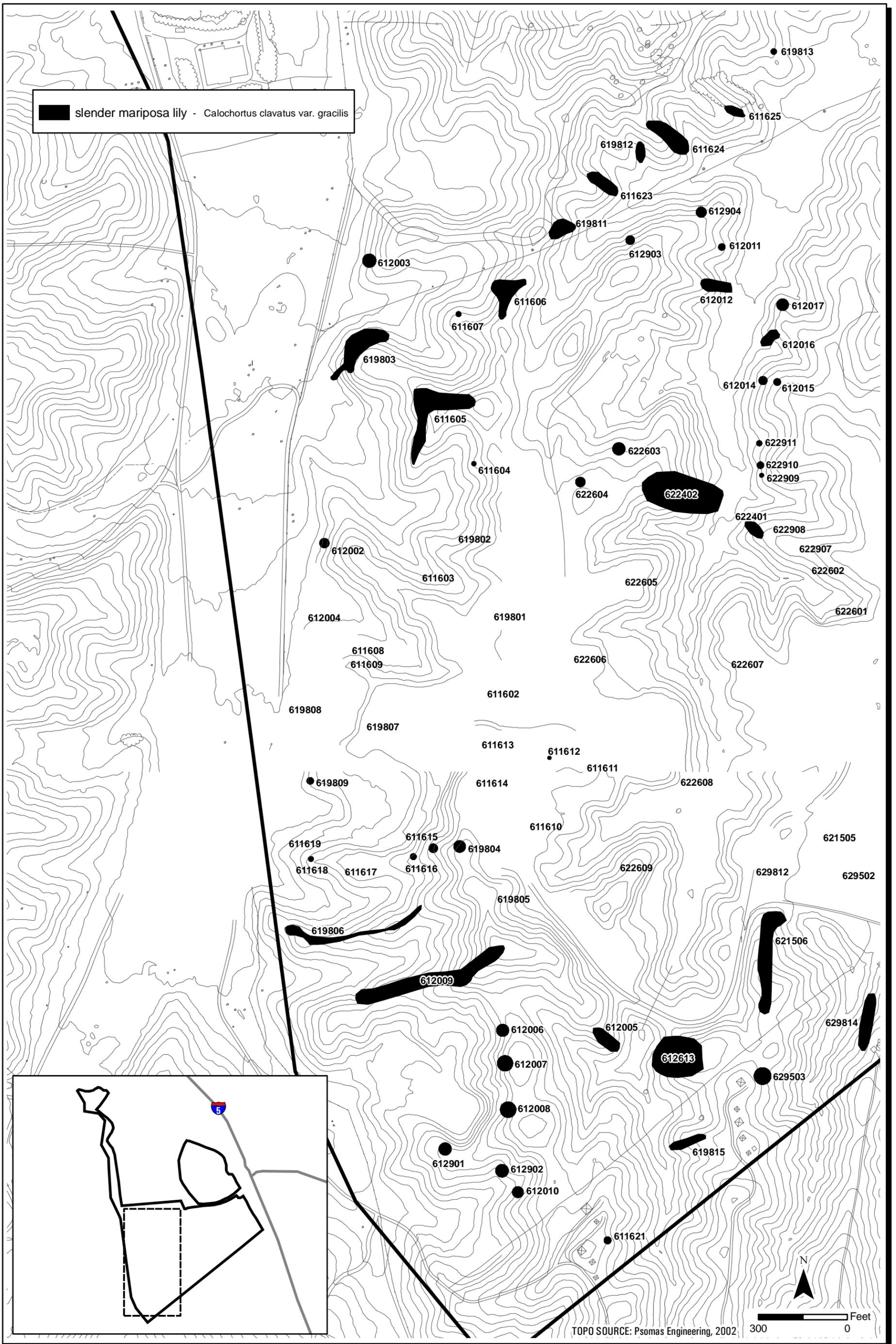
Entrada
2005 San Fernando Valley spineflower Results

FIGURE
4

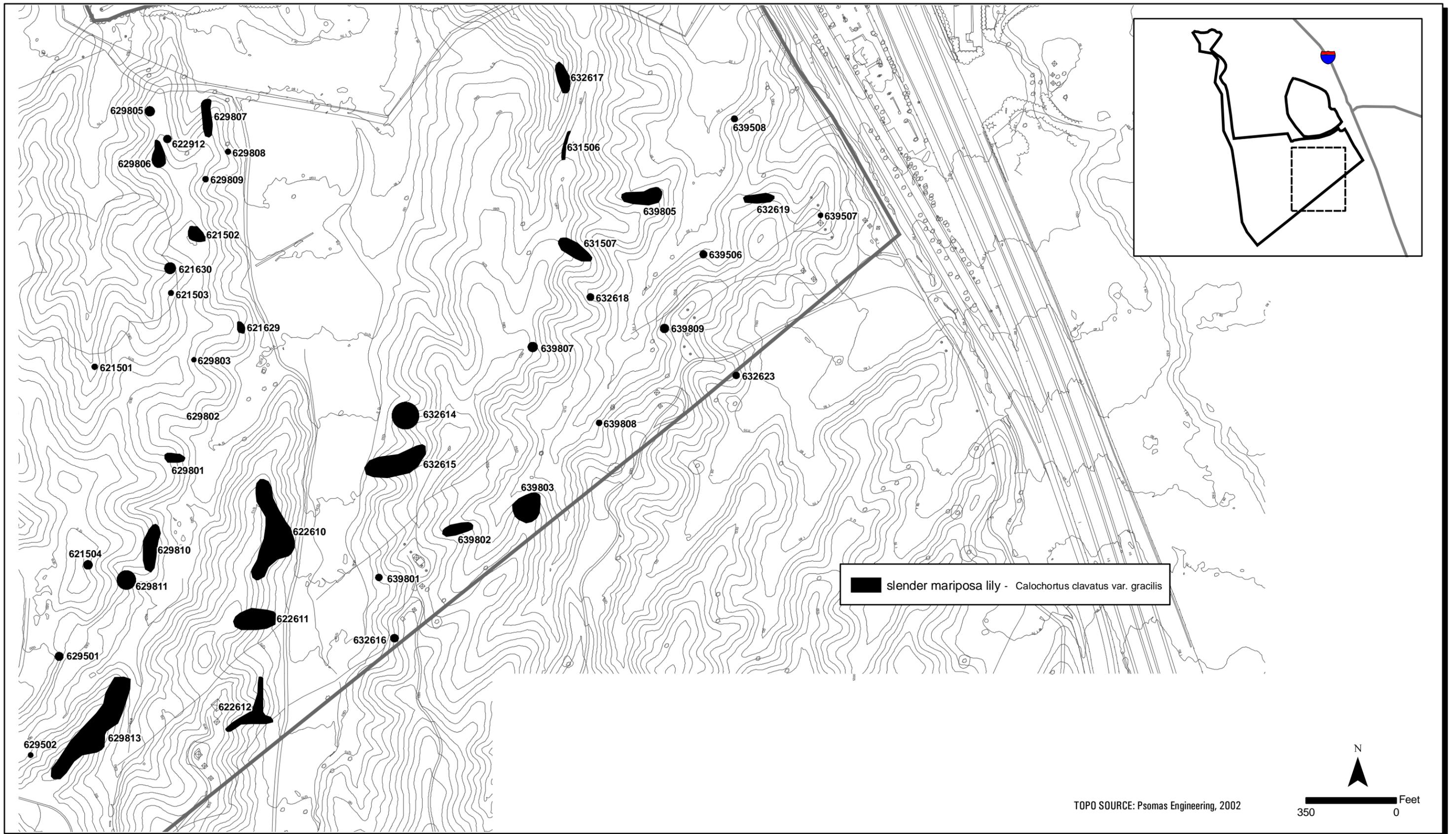


Entrada
2005 San Fernando Valley spineflower Results

FIGURE
5



Entrada **FIGURE 6**
2005 Sensitive Plant Survey Results



Entrada
2005 Sensitive Plant Survey Results

FIGUR
7

2005 Sensitive Plant Survey Results • Entrada Site

TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at the Entrada Site

<i>Scientific Name</i>	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Arenaria paludicola</i>	marsh sandwort	FE/SE	1B	dense freshwater marsh/perennial herb/May-August	Not observed during 2004 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrences are in the Santa Ana River and in Santa Barbara. Limited suitable habitat onsite; very low likelihood of occurrence within the study area.
<i>Astragalus brauntonii</i>	Braunton's milk-vetch	FE/None	1B	chaparral, coastal sage scrub, grasslands; often on carbonate substrates/perennial herb/March-July	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in the Simi Hills. Suitable habitat exists onsite. Moderate likelihood of occurrence within study area.
<i>Atriplex coulteri</i>	Coulter's saltbush	None/None	1B	coastal sage scrub and grasslands on alkaline or clay substrate/perennial herb/March-October	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite. Moderate likelihood of occurrence within study area.
<i>Atriplex serenana</i> var. <i> davidsonii</i>	Davidson's saltscale	None/None	1B	coastal bluff scrub and coastal sage scrub on alkaline substrate/annual herb/May-October	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite. Low likelihood of occurrence within the study area.
<i>Baccharis malibuensis</i>	Malibu baccharis	None/None	1B	chaparral, coastal sage scrub, cismontane woodland/deciduous shrub/August	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; closest known populations are in the western Santa Monica Mountains near Malibu. Not expected to occur within the study area.
<i>Berberis nevini</i>	Nevin's barberry	FE/SE	1B	chaparral, coastal sage scrub, riparian scrub, cismontane woodland on sandy or gravelly substrate/evergreen shrub/March-April	Not observed during 2005 field season. CNDDDB records exist for San Francisquito Canyon at confluence with Santa Clara River; suitable habitat present onsite. Moderate likelihood of occurrence within study area.
<i>Brodiaea filifolia</i>	thread-leaved Brodiaea	FT/SE	1B	clay substrate openings in chaparral, sage scrub, and grasslands/perennial herb (geophyte)/March-June	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence is in San Dimas. Suitable habitat present onsite. Low likelihood of occurrence within study area.

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TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at the Entrada Site

<i>Scientific Name</i>	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Calochortus catalinae</i>	Catalina mariposa lily	None/None	4	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland/ perennial herb (geophyte)/ February-May	Not observed during 2005 field season. In 2002, a <i>Calochortus</i> species with a wide seed capsule and a membranaceous bulb coat was observed onsite that was likely <i>C. catalinae</i> . A search of this area in 2005 only revealed <i>C. venustus</i> and <i>C. clavatus</i> var. <i>gracilis</i> . Low to moderate to high likelihood of occurrence in study area.
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa lily	None/None	1B	chaparral and coastal sage scrub/perennial herb (geophyte)/March-May	Observed 118 polygons predominantly on steep, north-facing slopes in California sagebrush throughout the study area. Overall onsite population estimate is 3,907 individuals within occurrence polygons covering 17.6 acres of the site. CNDDDB records for mouth of Pico Canyon.
<i>Calochortus plummerae</i>	Plummer's mariposa lily	None/None	1B	chaparral, coastal sage scrub, cismontane woodland, grasslands on rocky granitic substrate/perennial herb (geophyte)/May-July	Not observed during 2005 field season. A <i>Calochortus</i> species with narrow seed capsules and a fibrous bulb coat was observed onsite in 2002, but could not be confirmed as <i>C. plummerae</i> . A search of this area in 2005 only revealed <i>C. venustus</i> . Moderate likelihood of occurrence within study area.
<i>Calochortus weedii</i> var. <i>vestus</i>	late-flowered mariposa lily	None/None	1B	chaparral, cismontane & riparian woodland/perennial herb (geophyte)/ June-August	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, habitat similar to where species occurs in eastern Ventura County is present onsite. Moderate likelihood of occurrence within study area.
<i>Calystegia peirsonii</i>	Pierson's morning-glory	None/None	4	Chaparral, coastal sage scrub, cismontane woodland, grassland/ perennial herb/ May-June	Observed in chaparral and California sagebrush throughout the survey area.
<i>Calystegia sepium</i> ssp. <i>Binghamiae</i>	Santa Barbara morning-glory	None/None	1A	marshes and swamps/perennial herb/ April-May	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Centromadia</i> [=Hemizonia] <i>parryi</i> ssp. <i>Australis</i>	southern tarplant	None/None	1B	mesic edges of marshes in grasslands/annual herb/May-November	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite. Low likelihood of occurrence within study area.
<i>Cercocarpus betuloides</i> var. <i>blancheae</i>	island mountain-mahogany	None/None	4	Chaparral, closed-cone coniferous forest/ evergreen shrub/ February-May	Observed in mixed chaparral in the study area.

2005 Sensitive Plant Survey Results • Entrada Site

TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at the Entrada Site

<i>Scientific Name</i>	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower	FC/SE	1B	coastal sage scrub, sandy soils/annual herb/April-June	Observed 29 polygons in the southeastern, central, and western portions of the site. Total onsite population estimate is 750,480 individuals within occurrence polygons covering 1.3 acres of the site.
<i>Deinandra</i> [=Hemizonia] <i>minthornii</i>	Santa Susana tarplant	None/SR	1B	chaparral and coastal sage scrub on rocky substrate/deciduous shrub/July-November	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, records exist for the Simi Hills and Oat Mountain. Suitable habitat exists onsite. Low likelihood of occurrence within study area.
<i>Delphinium parryi</i> ssp. <i>Blochmaniae</i>	dune larkspur	None/None	1B	maritime chaparral, coastal dunes/ perennial herb/ April-may	Not observed during the 2005 field season. Not expected to occur.
<i>Dodecahema leptoceras</i>	slender-horned spineflower	FE/SE	1B	alluvial scrub on sandy substrate/ annual herb/April-June	Not observed during 2005 field season. Historic CNDDDB records exist for the Newhall or Val Verde quads in alluvial habitat similar to that present onsite. Moderate to high likelihood of occurrence onsite.
<i>Dudleya blochmaniae</i> var. <i>blochmaniae</i>	Blochman's Dudleya	None/None	1B	clay openings in chaparral and coastal sage scrub, grasslands/perennial herb/April-June	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat present onsite. Low to moderate likelihood of occurrence within study area.
<i>Dudleya cymosa</i> ssp. <i>Marcescens</i>	marcescent Dudleya	FT/CR	1B	chaparral, often on volcanic substrate/perennial herb (geophyte)/ April-June	Not observed during 2005 field season. No CNDDDB records exist for Newhall and Val Verde quads. Low likelihood of occurrence within study area.
<i>Dudleya cymosa</i> ssp. <i>Ovatifolia</i>	Santa Monica Mountains Dudleya	FT/None	1B	chaparral and coastal sage scrub, often on volcanic substrate/perennial herb (geophyte)/April-June	Not observed during 2005 field season. No CNDDDB records exist for Newhall and Val Verde quads. Suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Dudleya multicaulis</i>	many-stemmed Dudleya	None/None	1B	coastal bluff scrub, coastal sage scrub, valley and foothill grassland, rocky, often clay substrate/perennial herb/ April-June	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; closest known occurrences are in Calabasas and San Dimas. Suitable habitat exists onsite. Low to moderate likelihood of occurrence within study area.
<i>Dudleya parva</i>	Conejo Dudleya	FT/None	1B	coastal sage scrub and grassland on rocky, gravelly clays/perennial herb/May-June	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat exists onsite. Low to moderate likelihood of occurrence within study area.

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TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at the Entrada Site

<i>Scientific Name</i>	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Erodium macrophyllum</i>	round-leaved filaree	None/None	2	cismontane woodland and grasslands on clay substrate/annual herb/March-May	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads; however, records exist for Simi Valley, and this plant was observed in the hills east of Castaic Lake in 2003. Suitable habitat present onsite; moderate likelihood of occurrence in study area.
<i>Helianthus nuttallii</i> ssp. <i>Parishii</i>	Los Angeles sunflower	None/None	1A	marshes and swamps/perennial herb/ August-October	Not observed within study area during 2005 field season. A <i>Helianthus</i> population, discovered in 2002 at Castaic Spring, on the south side of the Santa Clara River between Middle Canyon and San Jose Flats, was determined by some experts to be this species, but determined by other experts not to be this species. Based on pollen electron microscopy and chromosome counts, it is likely that the Newhall <i>Helianthus</i> species is a hybrid between <i>H. nuttallii</i> and <i>H. californicus</i> or an intermediate evolutionary step between the two species (Porter and Fraga 2004). No suitable habitat observed in study area.
<i>Horkelia cuneata</i> var. <i>puberula</i>	Mesa horkelia	None/None	1B	chaparral, cismontane woodland, coastal sage scrub on sandy or gravelly substrate/perennial herb/February-December	Not observed during 2005 field season. No CNDDDB records exist for the Newhall or Val Verde quads. Suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	None/None	1B	Marshes, swamps, plays, vernal pools/ annual herb/ February-June	Observed as a component of an erosion control seed mix applied along dirt roads associated with the gas and power transmission line easement running the southeastern edge of the study area. These plants are growing in conditions outside the natural habitat for this species.
<i>Malacothamnus davidsonii</i>	Davidson's bush mallow	None/None	1B	chaparral, coastal sage scrub, riparian woodland/ deciduous scrub/June-January	Not observed during 2005 field season. Nearest occurrences are in Van Nuys and Sunland quads. Suitable habitat present onsite. Moderate likelihood of occurrence within study area.

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TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at the Entrada Site

<i>Scientific Name</i>	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Nama stenocarpum</i>	mud nama	None/None	2	edges of lakes, rivers, ponds, vernal pools/annual/January-July	Not observed during 2005 field season. Moderate likelihood of occurrence on banks of Santa Clara River and other mesic areas onsite. No CNDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Nolina cismontane</i>	chaparral nolina	None/None	1B	chaparral, coastal sage scrub on sandstone or gabbro substrate/ perennial shrub/May-July	Not observed during 2004 field season. No CNDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.
<i>Opuntia basilaris var. brachyclada</i>	short-joint beavertail	None/None	1B	chaparral, Joshua tree woodland, Mojavean desert scrub/succulent shrub/ April-June	This variety was identified onsite by Dudek in 2002; however, further investigations indicate that these plants are not consistent with <i>Opuntia basilaris var. brachyclada</i> . Therefore, <i>O. basilaris</i> plants were not mapped during surveys of the study area in 2005.
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta	FE/SE	1B	openings in chaparral and coastal sage scrub, grasslands/annual herb/March-August	Not observed during 2005 field season. No CNDDB records exist for the Newhall or Val Verde quads; nearest occurrences are in the Simi Valley. Suitable habitat present onsite. Moderate likelihood of occurrence within study area.
<i>Rorippa gambelii</i>	Gambel's watercress	FE/ST	1B	Marsh and swamps (freshwater and brackish)/ perennial herb/April-June	Not observed during 2005 field season. No CNDDB records exist for the Newhall or Val Verde quads. Limited suitable habitat present onsite. Very low likelihood of occurrence within study area.
<i>Senecio aphanactis</i>	rayless ragwort	None/None	2	chaparral, coastal sage scrub, cismontane woodland on alkaline substrate/annual herb/January-April	Not observed during 2005 field season. Historic CNDDB record for Saugus, south of Santa Clara River. Suitable habitat exists onsite. Low to moderate likelihood of occurrence within study area.
<i>Sidalcea neomexicana</i>	Salt spring checkerbloom	None/None	2	chaparral, coastal sage scrub, and playas on alkaline substrate/perennial herb/March-June	Not observed during 2005 field season, however, entire site not surveyed. No CNDDB records exist for the Newhall or Val Verde quads; suitable habitat exists onsite. Moderate likelihood of occurrence within study area.

2005 Sensitive Plant Survey Results • Entrada Site

TABLE 2
Sensitive Plant Species Observed or Potentially Occurring at the Entrada Site

<i>Scientific Name</i>	Common Name	Status Federal/State	CNPS List	Primary Habitat Associations/ Life Form/Blooming Period	Presence or Likelihood of Occurrence Onsite
<i>Thelypteris puberula</i> var. <i>sonorensis</i>	Sonoran maiden fern	None/None	2	meadows and seeps/perennial herb/ fertile January-September	Not observed during 2005 field season, however, entire site not surveyed. No CNDDDB records exist for the Newhall or Val Verde quads; nearest occurrence at Point Dume. Limited suitable habitat present onsite. Low likelihood of occurrence within study area.

Legend

FE:	Federally-listed as endangered	CNPS List 1A:	Plants presumed extinct in California
FT:	Federally-listed as threatened	CNPS List 1B:	Plants rare, threatened, or endangered in California and elsewhere
FC:	Federal candidate for listing	CNPS List 2:	Plants rare, threatened, or endangered in California but more common elsewhere
SC:	State candidate for listing	CNPS List 3:	Plants about which we need more information – a review list
SE:	State-listed as endangered	CNPS List 4:	Plants of limited distribution – a watch list
ST:	State-listed as threatened		
SR:	State-listed as rare		

2005 Sensitive Plant Survey Results • Entrada Site

SFVS polygons were identified in several areas onsite including the southeastern portion of the site, the central area in and beside the wash, and the western portion of the site adjacent to the Magic Mountain Theme Park on the south side and west side. These polygons are depicted on *Figures 3 through 5*. Labels for each of the polygons in these figures correlate with those in *Table 3*, which contains estimates for the numbers of individuals within each polygon.

TABLE 3
San Fernando Valley Spineflower
Summary of Occurrence Data for Entrada Site, 2005

Polygon Number	Population Estimate	Area (square feet)
611601	201,690	5,738
611626	61,000	1,243
612905	60	288
612906	5,152	578
612907	1,037	191
619814	3,120	635
621628	7	59
622404	5,500	8,548
622405	95,000	2,521
629504	55	82
629804	71,000	1,885
629815	200	181
631508	15,390	2,589
631509	47,270	6,238
632406	2,600	3,482
632407	40	31
632408	170,000	9,649
632620	7,500	3,028
632621	70	42
632622	15,000	5,362
632624	1	1.0
639505	125	496
639509	2,400	980
639510	65	10
639511	42	0.3
639512	1	0.9
639513	13	8
639804	5,000	2,306
639806	41,144	393
TOTALS	750,482	56,565

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Almost 70 percent of the SFVS individuals were found on south-facing slopes in habitat ecotonal between California sagebrush and grasslands and California buckwheat and grasslands. Elevations of the SFVS polygons on this site range from approximately 1,150 to 1,205 feet AMSL.

Vegetative cover in the area of SFVS occurrences ranges from 50 to 100 percent, but individuals are most common in areas with between 90 and 95 percent vegetative cover. About 40 percent of individuals were found on silty loam, 34 percent were found on clay loam, and about 16 percent were found on sandy loam soils. A total of 29 SFVS polygons were mapped ranging in size from one to 9,649 square feet. The number of individuals within each polygon ranges from one to 201,690. CNDDDB forms are included in *Appendix C* for each occurrence onsite.

4.2.2 Slender Mariposa Lily (*Calochortus clavatus* var. *gracilis*)

Slender mariposa lily has no state or federal status but is a CNPS List 1B plant. It is typically found in chaparral, coastal sage scrub, and grasslands, often on clay, and/or rocky soils. It has been documented to occur at the mouth of Pico Canyon and other canyons in the vicinity (Newhall Quad; CDFG 2004b). Other varieties of this species are documented from southern California: club-haired mariposa lily (*Calochortus clavatus* var. *clavatus*) and pale mariposa lily (*C. clavatus* var. *pallidus*). The club-haired mariposa lily differs in that it is virtually a serpentine endemic (restricted to serpentine soils) and a very robust species, generally attaining a height of one meter. Pale mariposa lily differs in that the petals are a paler yellow, the anthers are paler (yellow to pale purple), and the hairs on the petals are not as knobby or club shaped. Neither the club-haired mariposa lily nor pale mariposa are known to have a red line above the nectary on the petal, as is the case with the slender mariposa lily.

Multiple slender mariposa lily polygons were mapped within the study area by drawing boundaries on aerial photograph field maps around the areas that contained the mariposa lily. The *Calochortus* plants were scattered within these polygons, and estimates of the number of flowering individuals (not total number of individuals) were made based on visual estimations. Geophytes like *Calochortus* generally only have a percentage of the plants flower in any given year, and the non-flowering individuals are not as visible.

Within the Entrada study area, the slender mariposa lily was found primarily on south-facing slopes (70 percent of all individuals identified), and to a lesser extent on southeast-facing slopes (20 percent of all individuals identified) in annual grasslands, and California sagebrush and California buckwheat scrub (*Figures 6* and *7*). The plants were generally mapped in areas of high vegetative cover and on a variety of soil types (*e.g.*, silty loam, sandy loam, clay loam). This species is locally abundant within the study area: 118 polygons were mapped with a

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polygon size ranging from 105 to 133,222 square feet. The estimated number of individuals within each polygon ranges from one to 500, with a total of approximately 3,907 individuals observed within the project site (see *Table 4*). CNDDDB forms for each occurrence on this site are included in *Appendix C*.

TABLE 4
Slender Mariposa Lily
Summary of Occurrence Data for the Entrada Site, 2005

Polygon Name	Estimated Number of Individuals	Polygon Size (square feet)
611602	10	3,575
611603	400	11,511
611604	1	263
611605	500	18,366
611606	300	7,941
611607	7	342
611608	2	421
611609	1	105
611610	10	1,367
611611	2	441
611612	2	168
611613	5	937
611614	6	1,131
611615	25	852
611616	25	447
611617	10	613
611618	10	321
611619	3	263
611621	3	584
611623	200	4,617
611624	200	8,377
611625	100	1,829
612002	6	993
612003	3	1,841
612004	15	2,013
612005	50	4,307
612006	7	1,567
612007	10	2,424
612008	2	2,477
612009	10	25,946
612010	2	1,291
612011	3	524
612012	30	4,035
612014	15	765
612015	50	558
612016	6	2,325
612017	3	1,452
612613	3	20,656

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TABLE 4
Slender Mariposa Lily
Summary of Occurrence Data for the Entrada Site, 2005

Polygon Name	Estimated Number of Individuals	Polygon Size (square feet)
612901	3	1,609
612902	4	1,714
612903	3	842
612904	15	1,100
619801	28	8,490
619802	75	8,941
619803	300	12,274
619804	10	1,457
619805	20	1,571
619806	100	9,456
619807	150	7,147
619808	3	282
619809	10	542
619811	50	4,296
619812	20	1,925
619813	1	390
619815	3	3,537
621501	4	481
621502	10	3,212
621503	2	429
621504	8	1,079
621505	2	658
621506	60	16,335
621629	4	1,281
621630	2	1,662
622401	60	2,531
622402	50	29,747
622601	1	718
622602	6	8,537
622603	3	1,601
622604	2	1,001
622605	50	64,883
622606	15	32,423
622607	40	133,222
622608	10	10,477
622609	15	34,339
622610	40	32,063
622611	25	11,533
622612	10	10,558
622907	29	909
622908	34	511
622909	24	234
622910	10	537
622911	40	357
622912	14	843

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TABLE 4
Slender Mariposa Lily
Summary of Occurrence Data for the Entrada Site, 2005

Polygon Name	Estimated Number of Individuals	Polygon Size (square feet)
629501	6	961
629502	3	384
629503	2	2,864
629801	10	2,548
629802	1	330
629803	1	352
629805	20	1,259
629806	20	4,275
629807	20	5,308
629808	1	439
629809	1	501
629810	20	8,975
629811	20	4,512
629812	50	10,327
629813	100	37,996
629814	10	7,401
631506	1	1,686
631507	25	6,877
632614	15	9,006
632615	15	18,497
632616	1	871
632617	2	4,791
632618	1	718
632619	2	3,826
632623	3	671
639506	5	769
639507	1	372
639508	2	583
639801	1	661
639802	10	4,594
639803	75	9,946
639805	30	7,916
639807	10	1,264
639808	1	501
639809	20	1,043
Totals	3,907	768,403

4.2.3 Island Mountain-mahogany (*Cercocarpus betuloides* var. *blanchae*)

Island mountain-mahogany has no state or federal status, but it is found on List 4 of the CNPS *Inventory*. It is an evergreen shrub that occurs as part of the chaparral in Los Angeles and Ventura counties, as well as on several of the Channel Islands (CNPS 2001). This species was not observed during limited focused surveys for sensitive plant species conducted in 1992

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(Dames and Moore 1993) or general botany surveys conducted in 1995 (RECON and Impact Sciences 1996). Onsite, island mountain-mahogany occurs as an occasional component of chaparral at the base of north-facing slopes in the Entrada site. This species was not mapped due to its relatively low sensitivity level. CNDDDB forms were not completed for this species because of this same reason.

4.2.4 Peirson's morning glory (*Calystegia peirsonii*)

Peirson's morning-glory has no state or federal status, but it is found on List 4 of the CNPS *Inventory*. This morning-glory is a rhizomatous perennial that typically is found in more desert-like areas (e.g., creosote bush scrub, Joshua tree woodland) at elevations which exceed 3,000 feet AMSL, although there are records in the CNDDDB for lower elevations in the local area. While never abundant, Peirson's morning-glory is widespread onsite and was observed on virtually all ridges and slopes, weakly climbing over mixed chaparral, California sagebrush, California buckwheat, and in grasslands throughout the 550-acre study area. Due to the widespread nature of Peirson's morning-glory on the Entrada site and relatively low sensitivity level, it was not mapped. CNDDDB forms were not completed for this species because of these same reasons.

4.2.5 Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*)

Coulter's goldfields is a CNPS List 1B plant that previously had not been documented to occur in the immediate vicinity of the project site (Hickman 1993; CNPS 2001). This variety is generally restricted to alkali playas, vernal pools, and some freshwater habitats in Riverside, San Diego, and Los Angeles counties (CNPS 2001). The Coulter's goldfields plants on the Entrada site appear to be the result of the application of an erosion control hydroseed mix along the gas and power transmission line easements. The plants are growing in areas that are not typical habitat for this species. They are growing on cut banks and in the graded road as opposed to alkali playas or other areas with standing water. These plants appear to be a non-native introduction; therefore CNDDDB data forms are not included.

4.2.6 Southern California black walnut (*Juglans californica*)

Southern California black walnut has no state or federal status, but is found on List 4 of the CNPS *Inventory*. Within its distributional range in southern California, this species is found as scattered occurrences throughout chaparral, cismontane woodlands, and coastal and alluvial scrub habitats (CNPS 2001). This large shrub to tree was incidentally observed as an occasional component of mixed chaparral, California sagebrush and alluvial scrub onsite. CNDDDB forms were not completed for this species because of its relatively low sensitivity.

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4.2.7 Bryophytes (Non-vascular Plants) and Lichens

Bryophytes (non-vascular plants including mosses, liverworts, and hornworts) include plants which lack specialized water- or nutrient-conducting tissue. Lacking water-transporting tissue, bryophytes must live in proximity to a moisture source and are commonly found in damp or shady microhabitats. Overall, the Entrada site is fairly arid and supports little of this type of habitat; however, limited quantities of mosses were found on north-facing slopes, in chaparral, and along shady banks and cut faces of ephemeral stream channels.

Lichens, in contrast, are not classified as plants but are instead unique mutualistic associations of fungi with green algae and/or cyanobacteria. Lichens are extremely widespread in nature; they are found at nearly every latitude and altitude on earth. Lichens often grow on exposed rocks but are also found on bare soil, tree trunks, or in one instance, completely submerged in water (Raven *et al.* 1992). Generally, the Entrada site contains little habitat appropriate for the growth of lichens as rocky substrates are limited.

No sensitive non-vascular plants or lichens were observed onsite or are known to occur in the proximity of the Entrada site.

5.0 ACKNOWLEDGMENTS

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APPENDIX A
Resumes of Survey Personnel

MICHELLE L. BALK

ENVIRONMENTAL SPECIALIST

Education

- M.S., Biology with emphasis Ecology and Evolution, University of Akron (1999)
- B.S., Zoology, Iowa State University (1997)

Professional Affiliations

- California Native Plant Society
- Southern California Botanists
- California Botanical Society

Professional Certifications

- Quino Checkerspot Butterfly 10a Survey Permit (USFWS Federal Permit)
- CDFG Rare, Threatened, and Endangered Plant Voucher Collection Permit

Experience

Ms. Balk has over four years of experience in environmental document preparation and resource conservation planning. Project experience includes biological resource surveys, data collection and analysis, environmental assessments, wetlands delineations, permitting, mitigation design and monitoring, and sensitive species surveys. Ms. Balk has engaged in interagency coordination and public outreach efforts due to the complexities of each project. Ms. Balk has also participated in the development of habitat conservation plans pursuant to Section 10 of the Federal Endangered Species Act.

Water/Wastewater/Reclaimed Water

- **Miramar Trunk Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California.** Performed delineation of “waters of the United States” and wetlands under the jurisdiction of the U.S. Army Corps of Engineers and California Department of Fish and Game. Completed vegetation mapping and sensitive plant surveys on this 13-acre project site. Conducted focused plant surveys for the state- and federally-listed willow monardella and Encinitas baccharis. Coordinated with others on specific project design and prepared biological resources report.
- **Wild Rose Reservoir II Project, Lee Lake Water District, County of Riverside, California.** Prepared biological technical reports, including vegetation mapping, for California Environmental Quality Act documentation.
- **North Agua Hedionda Sewer Rehabilitation Project, City of Carlsbad, California.** Performed wetlands delineation, rare plant surveys, and exotic species mapping for half-mile sewer rehabilitation and shoreline protection project adjacent to coastal lagoon.
- **Salt Creek Gravity Sewer Project, City of Chula Vista, California.** Performed construction monitoring to assure compliance with permit conditions for 11-mile gravity sewer along north edge of Otay River Valley. Monitoring responsibilities included ensuring the proper implementation of standard construction best management practices (BMPs) to avoid and minimize construction-related impacts to sensitive habitat and species.
- **60th Street Canyon Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California.** Completed vegetation

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ENVIRONMENTAL SPECIALIST

mapping, floristic surveys, and sensitive plant surveys on this seven-acre project site. Coordinated with others on specific project design and prepared biological resources report.

- **Lexington/Manzanita Canyon Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California.** Completed vegetation mapping, floristic surveys, sensitive plant surveys, and potential revegetation site surveys on this project site. Coordinated with others on specific project design and prepared biological resources report.

Flood Control/Flood Storage/Stormwater

- **Poway Creek Silt Removal Project, City of Poway, California.** Performed wetlands delineation for creek silt removal project affecting over three acres of riparian habitat.

Transportation

- **Oceanside to Escondido Rail Project, North County Transportation District, Cities of Oceanside, Vista, San Marcos, Escondido and County of San Diego, California.** Mapped exotic vegetation within Loma Alta Creek, Buena Vista Creek, Buena Creek, Agua Hedionda Creek, San Marcos Creek, and Escondido Creek Watersheds.
- **State Route 125 South, California Department of Transportation, City of San Diego, California.** Conducted rare plant surveys and Quino checkerspot butterfly surveys for mitigation site alternatives.
- **Sorrento-Miramar Curve Realignment and Second Main Track Project, North County Transit District, City of San Diego, California.** Conducted a focused plant survey for the CNPS List 1B Palmer's grapplinghook along the approximately 180-acre linear rail corridor.

Habitat Conservation Planning

- **Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), Riverside County, California.** Assisted in the development of the Multiple Species Habitat Conservation Plan for western Riverside County. Project involvement included research on potentially-covered bird species and synthesis of information into species accounts, reserve design, document preparation, interagency coordination, and public outreach.

Universities/Colleges

- **California State University San Marcos (CSUSM) Student Housing Facility, California State University, San Marcos, California.** Conducted vegetation mapping and wetlands delineation, prepared wetlands permit applications, and coordinated with resource agencies for impacts associated with public university student housing project.

Master Planned Communities (includes mixed-use projects)

- **Newhall Ranch Development Project, Newhall Land and Farming Company, Valencia, California.** Served as team leader for botanical surveys on Newhall Land and Farming Company parcels. Directed field team in performing general sensitive plant surveys and focused surveys for the state-

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ENVIRONMENTAL SPECIALIST

listed endangered San Fernando Valley spineflower on project sites totaling 16,500 acres in Los Angeles and Ventura Counties.

- **Planning Area 1 Project, The Irvine Company, County of Orange, California.** Conducted potential native grassland mitigation site surveys and rare plant surveys for CNPS List 1B sensitive plant species including intermediate mariposa lily as a member of a team of botanists within a portion of the 4,200-acre project site.
- **Village 3 Project, Otay Ranch Company, City of Chula Vista, California.** Conducted rare plant surveys, including focused surveys for the federally-listed threatened and state-listed endangered Otay tarplant, on 263 acres in 2003.
- **Rolling Hills Ranch Wetland Mitigation Project, McMillin Land Development, City of Chula Vista, California.** Conducted biological monitoring for phase one (1.2-acre) and phase two (1.8-acre) wetland restoration project. Habitat types restored include freshwater marsh, alkali marsh and southern willow scrub.

Residential (Subdivisions)

- **Schleuniger Residential Development Project, Highgrove Developments, Riverside County, California.** Conducted wetlands delineation and prepared wetlands permit applications pursuant to Clean Water Act Sections 401 and 404 and California Department of Fish and Game Code Section 1603 for 51-unit housing development. Coordinated permitting process with resource agencies.
- **High Meadow Ranch Residential Development Project, Vicar Ventures, LLC, Community of Lakeside, County of San Diego, California.** Performed wetlands delineation and prepared wetlands permit applications, including conceptual mitigation plan, for 800-acre residential development project. Coordinated and negotiated with wetlands resource agencies and the U.S. Fish and Wildlife Service regarding sensitive species issues onsite.
- **Nickel Creek Project, Ramona, California.** Performed rare plant mapping for the CNPS List 1B smooth tarplant for 14-acre multi-family residential development on the Santa Maria River.
- **Quantum Estates II Project, Quantum Estates II, LLC, County of San Diego, California.** Conducted wetlands delineation and floristic survey for 39-acre residential development.
- **Camelot Project, Western Pacific Housing, City of San Diego, California.** Conducted a delineation of "waters of the United States" and wetlands under the jurisdiction of the U.S. Army Corps of Engineers, California Department Fish Game, and California Regional Water Quality Control Board for the approximately 39-acre site. Performed floristic and rare plant surveys for site.
- **Levatino Property Project, Marker Development, Inc., Carlsbad, California.** Provided wetlands delineation and floristic surveys for 20-acre property.
- **Barracuda Property Project, Private Individual Land Owner, Laguna Beach, California.** Performed focused survey for the CNPS List 4 western dichondra within conservation easement on the property.

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- **Oxnard Shores Project, City of Oxnard, California (2.8 acres); Concho Circle Project, Oceanside, California (2.4 acres); Harbor Project, City of Oxnard, California (1.2 acres).** Performed vegetation mapping, general floristic surveys, and focused sensitive plant surveys for residential subdivision properties throughout southern California. Prepared biological reports summarizing results and implications of site surveys.
- **Single Family Residence Projects for Individual Land Owners, Cities of Laguna Beach (Third Avenue Project, Stan Oak Drive Project, Crestview Drive Project, Zell Project) and City of San Diego (Paul Girdner Residence).** Conducted vegetation mapping, general floristic surveys, and focused sensitive plant surveys for single family residence projects throughout southern California. Prepared biological reports summarizing results and implications of site surveys.

Open Space Vacations

- **Lin Poco Lago Project and Roxbury Terrace Project, Private Individual Land Owners, Community of Rancho Santa Fe, County of San Diego, California.** Prepared open space vacation application permits and supporting biological documentation for submittal to the County of San Diego. Negotiated with County staff regarding project mitigation requirements. Coordinated with engineering and survey staff on project survey and stormwater prevention plan documentation requirements.

Habitat Restoration Projects

- **Famosa Slough Supplemental Environmental Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California.** Conducted vegetation mapping and floristic survey of coastal salt marsh restoration project area.

Parks/Recreational Facilities

- **La Borde Canyon Off-Highway Vehicle Park Study, County of Riverside, La Borde Canyon, Riverside County, California.** Conducted pitfall trapping to determine species composition and distribution of reptile species in La Borde Canyon, Riverside County, California. Assisted in the installation and implementation of 20 reptile pitfall trap arrays and identified captured reptile species. Also conducted general wildlife and raptor nest surveys for the 2,600-acre study area.

Electricity Facilities

- **Pole Maintenance Project/Bark Beetle Project, Southern California Edison, San Bernardino and San Jacinto Mountains, California.** Conducted botanical surveys and habitat assessments for sensitive plants at pole replacement locations and along electric lines at numerous locations in the San Bernardino and San Jacinto Mountains.

Vernal Pool Floral Surveys

- Performed floristic surveys of vernal pools for **St. Jerome's Catholic Church Project (17.6 acres), Catholic Diocese, City of San Diego, California; Manzanita Partners Project (6.8 acres), City of**

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Carlsbad, California; and Otay Ranch Village 13/Resort Site, Otay Ranch Company, County of San Diego, California.

Publications

- "Phenotypic effects of leptin in an ectotherm: a new tool to study the evolution of life histories and endothermy?" with P.H. Niewiarowski and R.L. Londraville. *The Journal of Experimental Biology* 203:295-300, 2000.

Relevant Experience

- "Spring Flora across Kern County" presented by the Jepson Herbarium. May 6-9, 2004.
- "Basic Wetland Delineation" presented by the Wetland Training Institute, Inc. August 2-6, 2004.
- "Morphology and Identification of Flowering Plants" workshop at Jepson Herbarium, Berkeley, California. March, 2003.
- "Summer Annuals and Fall-Blooming Shrubs of the Eastern Mojave Desert" class through the Jepson Herbarium, Berkeley, California. September 2003.
- Volunteer, Project Wildlife, San Diego, California. Cared for injured wildlife and reared baby birds at wildlife rescue organization.
- "Sunday Birds" field ornithology course with San Dieguito Adult School, Encinitas, California.

SCOTT BOCZKIEWICZ

BIOLOGIST/ HABITAT RESTORATION SPECIALIST

Education

- B.S., Biological Conservation, University of Wisconsin, Madison (1994)
- B.F.A., Painting and Drawing, University of Wisconsin, Madison (1994)

Professional Affiliations

- Society for Wetland Scientists (SWS)
- Society for Conservation Biology (SCB)
- Society for Ecological Restoration, California Chapter (SERCa)

Experience

Mr. Boczkiewicz has a diverse range of work experience in the biological sciences, with emphasis in conservation biology, wetland science, and restoration ecology. He has 12 years of progressive experience as a biologist, and has been evaluating impacts to sensitive, rare, threatened and endangered plant and wildlife species throughout Southern California for over four years. He has conducted sensitive species assessments, biological resource inventories, vegetation mapping, and wetland delineations for large public and private land holdings, and also has experience conducting focused surveys for botanical and wildlife species throughout San Diego, Riverside, Orange, Los Angeles, and San Bernardino Counties. Mr. Boczkiewicz has performed biological monitoring of construction and infrastructure maintenance projects occurring in environmentally sensitive and/or protected areas, produced assessments of wetlands and uplands to support management plans, flood control projects and planning studies, designed mitigation plans and habitat restoration and monitoring plans for riparian, wetland, and upland habitats, identified regulatory issues for development and infrastructure projects to guide project designs, completed permit applications supporting project compliance with federal, state, and local environmental regulations, and completed State grant applications for municipal stream restoration projects.

Water/Wastewater/Reclaimed Water

- **As-Needed Biological Resources, City of San Diego Metropolitan Wastewater Department (MWW), City of San Diego, California.** Biological surveys, monitoring and reporting were completed in over twenty urban canyons within the City of San Diego from 2001 to 2004. Provided construction monitoring and emergency sewer maintenance monitoring services, conducted biological resources and habitat impact assessments and prepared reports for CEQA compliance, developed construction design recommendations and minimization and avoidance measures for work in sensitive habitat areas, and created conceptual mitigation plans and mitigation monitoring and reporting programs for a variety of project impact areas within urban canyons and open space in San Diego.
- **Sorrento Valley Utilities Improvement Revegetation Project, City of San Diego, California.** Conducted restoration project data collection within the 12-acre salt marsh habitat restoration project.
- **Sorrento Creek Channel Maintenance Project, City of San Diego Transportation Department, Street Division, City of San Diego, California.** Conducted water quality monitoring and assisted with sediment study establishment in freshwater marsh habitat during channel dredging (2001 and 2003) and vegetation clearing (2002) for the Sorrento Creek Channel Maintenance Project.

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- **Miramar Trunk Sewer Replacement and Permanent Access Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California.** Assisted with formal wetland delineation of “waters of the United States” and wetlands under the jurisdiction of the U.S. Army Corps of Engineers and California Department of Fish and Game. Helped update vegetation mapping on this 13-acre project site.
- **Metropolitan Water District of Southern California, San Diego Pipeline No. 6, San Diego County, California.** Conducted rare plant surveys and habitat assessments for over ten federally- and state-listed plants within chaparral and woodland habitats.
- **Westside Stream Diversion, City of Portland Environmental Services, Portland, Oregon.** Conducted Natural Resources Assessments of four large watersheds in Southwest Portland to support a cost/benefit analysis for separating stormwater and sanitary sewer flows within those watersheds. Identified sensitive natural areas and evaluated all watersheds for multiple objective amenity areas that may support stream restoration, wetland or upland habitat creation, or other projects that provide benefit to the community while reducing flow to the CSO system. Identified all regulatory issues associated with natural resource impacts from construction activities within environmentally sensitive or protected areas.

Transportation

- **State Route 56 Project, City of San Diego Engineering and Capital Projects Transportation Division, City of San Diego, California.** Provided permitting services and secured a CCC Coastal Development Permit, ACOE Section 401 Individual Permit, CDFG Section 1601 SAA, RWQCB Section 401 Water Quality Certification and USFWS Take Authorization for least Bell’s Vireo for construction of the SR-56 Project. Provided mitigation site analysis on lower Los Peñasquitos Creek including an HGM-based wetland assessment, and completed a conceptual wetland creation and enhancement plan to mitigate impacts to jurisdictional wetlands resulting from construction of SR-56 in San Diego. The 25-acre El Cuervo Norte riparian creation and enhancement project was installed in the west end of the Los Peñasquitos Canyon Preserve in 2004.
- **Oceanside to Escondido Rail Project, North County Transit District (NCTD), cities of Oceanside, Vista, San Marcos and Escondido and County of San Diego, California.** Assisted in a brown-headed cowbird trapping project along the project alignment during the 2003 and 2004 breeding seasons.
- **Camino Ruiz Section A Wetland Mitigation Monitoring, Western Pacific Housing, San Diego, California.** Providing maintenance coordination, mitigation monitoring and reporting for 2.7 acre riparian mitigation site in McGonigle Canyon. The site includes creation and restoration of southern willow scrub and freshwater marsh along a tributary to McGonigle Canyon Creek to mitigate for impacts to wetlands resulting from improvements to Camino Ruiz Road.

Parks and Recreation Facilities

- **La Borde Canyon Off-Highway Vehicle Park Study, County of Riverside, La Borde Canyon, Riverside County, California.** Conducted pitfall trapping to determine species composition and distribution of reptile species in La Borde Canyon, Riverside County, California. Assisted in the

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installation and implementation of 20 reptile pitfall trap arrays and identified captured reptile species. Also conducted general wildlife and raptor nest surveys for the 2,600-acre study area.

- **Willamette Greenway Wildlife and Habitat Inventory, Portland Planning Bureau, Oregon.** Conducted a comprehensive natural, scenic, and recreational resource inventory of the Willamette River Greenway. The planning area, which covers the entire length of the river passing through Portland, is approximately 17 miles long and up to 2 miles wide. Conducted natural resource inventories, including assessment of fish and wildlife habitats, special status species, significant natural areas, vegetative cover, and other natural features.

Flood Control/Flood Storage/Stormwater

- **Poway Creek Channel Maintenance Project, City of Poway, Poway, California.** Completed a grant application for the State of California Department of Water Resources Urban Streams Restoration Program. The grant, if awarded, will help fund design and implementation of the Poway Creek restoration Project. Will be completing CEQA and wetlands permit preparation and processing for Section 404 Individual Permit, Section 1603 Streambed Alteration Agreement, and Section 401 Water Quality Certification.
- **Meadowbrook Villages Wetland Mitigation, Stewardship Foundation, Escondido, California.** Completed a conceptual restoration plan to mitigate impacts to southern willow scrub resulting from the proposed Meadowbrook Villages Senior Housing Development along Reidy Creek in Escondido, California. The conceptual plan provides details for approximately six acres of wetland creation along Reidy Creek, including development of a flood storage channel and adjacent slopes supporting southern willow scrub, mule fat scrub, and coast live oak riparian forest.
- **Gavilan Hills-Smith Road Flood Control Project, Riverside County Flood Control and Water Conservation District, City of Riverside, California.** Prepared a Habitat Mitigation and Monitoring Plan (HMMP) for onsite mitigation in the Gavilan Hills, south of Lake Matthews in of Riverside. The plan will be implemented in 2005 and includes restoration of a spring-fed pond, ephemeral channel, and creation of coastal sage scrub, woodland and wetland scrub habitats on an historic homestead site. Will also be providing mitigation monitoring and reporting services for the project through 2010.
- **Murphy Canyon Flood Channel Study, San Diego, California.** Conducted general botanical and wildlife surveys and rare plant surveys for the Murphy Canyon drainage in San Diego. Completed a biological resources impact analysis and a mitigation search for the City of San Diego Murphy Canyon Culvert Project.
- **Collier Marsh Wetland Delineation, Western Water District, Lake Elsinore, California.** Conducted a jurisdictional wetland delineation of an approximately 50-acre portion of Collier Marsh, located immediately north of Lake Elsinore in Riverside, California. The wetland delineation contributed to completion of a constraints report for the Eastern Municipal Water District identifying FEMA floodway boundaries.
- **Westside Stream Diversion, City of Portland Environmental Services, Oregon.** Conducted Natural Resources Assessments of four large watersheds in Southwest Portland to support a

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cost/benefit analysis for separating stormwater and sanitary sewer flows within those watersheds. Identified sensitive natural areas and evaluated all watersheds for multiple objective amenity areas that may support stream restoration, wetland or upland habitat creation, or other projects that provide benefit to the community while reducing flow to the CSO system. Identified all regulatory issues associated with natural resource impacts from construction activities within environmentally sensitive or protected areas.

Jurisdictional Wetland Delineation

- **Biological Report for the County of San Diego, Village Nurseries, Pauma Valley, California.** Conducted an historical wetland delineation on Village Nurseries property for the County of San Diego, to support an impact analysis and development of a stream restoration plan for unauthorized impacts to jurisdictional wetlands on private property.
- **Peñasquitos Lagoon Wetland Delineation, Metropolitan Wastewater Department, San Diego, California.** Conducted a jurisdictional wetland delineation of an approximate 3.0 acre riparian and salt marsh restoration site located in Peñasquitos Lagoon for completion of mitigation and agency sign-off.
- **Murphy Creek Wetland Delineation, City of San Diego Transportation and Engineering Department, San Diego, California.** Conducted a wetland delineation to develop an impact analysis for flood control maintenance of storm channel in eastern San Diego. Also completed a biological resources impact analysis and a mitigation search for the City of San Diego Murphy Canyon Culvert Project.
- **Collier Marsh Wetland Delineation, Western Water District, Lake Elsinore, California.** Conducted a jurisdictional wetland delineation of an approximately 50-acre portion of Collier Marsh, located immediately north of Lake Elsinore in Riverside, California. The wetland delineation contributed to completion of a constraints report for the Eastern Municipal Water District.
- **Riparian Wetland Delineation, The Escondido Creek Conservancy, Escondido, California.** Conducted a jurisdictional wetland delineation to provide baseline biological site information supporting development of a long-term management plan for a 75-acre preserve property located along Escondido Creek in unincorporated San Diego County.
- **Johnson Creek Predesign Wetland Study, City of Portland Environmental Services, Portland, Oregon.** Conducted over seventy-five wetland delineations, wildlife habitat assessments, and functional value assessments of publicly owned properties within the 100-year floodplain of Johnson Creek. The study supported development of flood mitigation projects and programs for rehabilitating Johnson Creek watershed's natural functions. Also evaluated flood storage capacity, identified habitat values, and assessed potential for restoration and enhancement of habitat, hydrologic, and flood storage functions for each property (1999 – 2000).

Master Planned Communities

- **Newhall Ranch Development Project, Newhall Land and Farming Company, Los Angeles and Ventura counties, California.** Conducted focused surveys for sensitive plant species including the state-listed San Fernando Valley spineflower on approximately 7,000 acres in 2002 and 15,000

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acres in 2003. Conducted San Fernando Valley spineflower seed collection in 2003. Coordinated and monitored geotechnical testing in sensitive areas of Newhall Ranch.

- **Campus Master Plan 2000, San Diego State University, City of San Diego, California.** Conducted biological resources surveys, wetland delineation and impacts analysis to produce biotechnical report supporting the SDSU draft 2020 Master Plan Revision EIR. Represented the Program EIR and biotechnical data in community planning meetings and public agency site visits.

Residential/Sub-divisions

- **Quantum Estates II Project, Quantum Estates II, LLC, County of San Diego, California.** Conducted a comprehensive floristic survey for a 39-acre residential development property.
- **Camelot Project, Western Pacific Housing, City of San Diego, California.** Assisted the Lead Botanist with a formal jurisdictional wetland delineation, floristic and rare plant surveys on an approximately 39-acre site.
- **Torrey Santa Fe Project, Western Pacific Housing, City of San Diego, California.** Conducted construction and erosion control monitoring on the site in Carmel Valley and prepared a restoration plan for coastal sage scrub slopes impacted by construction activities within the City of San Diego MHPA.
- **Bryn Glen Wetland Mitigation Monitoring, San Diego, California.** Providing maintenance coordination, mitigation monitoring and reporting for a riparian mitigation site near McGonigle Canyon. The site includes creation and restoration of approximately 1.4 acres of southern willow scrub and freshwater marsh along a tributary to McGonigle Canyon Creek to mitigate for impacts to wetlands resulting from the Bryn Glen housing development.

Commercial/Office/Industrial

- **Pacifica Palomar Wetland Mitigation, Carlsbad, California.** Completed a conceptual restoration plan to mitigate impacts to southern willow scrub resulting from the proposed culvert improvements to Laurel Tree Road over Encinas Creek in Carlsbad. The conceptual plan provides details for approximately 0.5 acre of wetland creation and restoration and 1.0 acre of coastal sage scrub creation adjacent to Encinas Creek.

Habitat Restoration Plans

- **Tecolote Creek Salt Marsh Mitigation, City of San Diego, San Diego, California.** Completed a conceptual restoration plan to mitigate the impacts to coastal salt marsh resulting from the City of San Diego Tecolote Creek Recirculation project. The conceptual plan provides details for approximately 0.25 acre of onsite salt marsh creation and restoration on the east side of Mission Bay Park.
- **Poway Creek Channel Maintenance Project, City of Poway, California.** Currently conducting studies to support development of the Poway Creek Restoration Plan, a riparian restoration project on 1.5 miles of Poway Creek between Midland and Pomerado Roads, in Poway, California.

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- **Biological Report for the County of San Diego, Village Nurseries, Pauma Valley, California.** Completed a stream restoration plan for Potrero Creek, a tributary of the San Luis Rey River in Pauma Valley, California. The plan will restore stream channel areas disturbed by mining activities and agricultural production.
- **Meadowbrook Villages Wetland Mitigation, Stewardship Foundation, Escondido, California.** Completed a conceptual restoration plan to mitigate impacts to southern willow scrub resulting from the proposed Meadowbrook Villages Senior Housing Development along Reidy Creek in Escondido, California. The conceptual plan provides details for approximately 6.0 acres of wetland creation along Reidy Creek, including development of a flood storage channel and adjacent slopes supporting southern willow scrub, mule fat scrub, and coast live oak riparian forest.
- **Pacifica Palomar Wetland Mitigation, Pacific Island Realty, Carlsbad, California.** Completed a conceptual restoration plan to mitigate impacts to southern willow scrub resulting from the proposed culvert improvements to Laurel Tree Road over Encinas Creek in Carlsbad. The conceptual plan provides details for approximately 0.5 acre of wetland creation and restoration and 1.0 acre of coastal sage scrub creation adjacent to Encinas Creek.
- **Adobe Falls Supplemental Environmental Project (SEP), City of San Diego, San Diego, California.** Completed a biological resources assessment and designed a restoration plan and site specific erosion control plan for a 4.0 acre riparian wetland site along Alvarado Creek in San Diego. The restoration plan was designed to fit a predetermined budget amount of \$310,000, and to meet all federal and state regulatory requirements.
- **Wetland Mitigation and Floodplain Restoration Monitoring, HMG, Washington County, Oregon.** Developed revegetation plans for a 3.52 acre wetland mitigation site in the Tualatin River 100-year floodplain in Washington County, Oregon. Conducted compensatory wetland mitigation monitoring of floodplain restoration activities, and produced an assessment of planted vegetation survival and functions of mitigation site hydrology.

Conservation Planning

- **Western Riverside County Multiple Species Habitat Conservation Plan, Riverside County, California.** Assisted in the development of fish species descriptions for the Multiple Species Habitat Conservation Plan (HCP) for western Riverside County.
- **Biological Resource Surveys, The Escondido Creek Conservancy, Escondido, California.** Conducted sensitive biological resources surveys for a 75-acre preserve property along Escondido Creek in unincorporated San Diego County, to provide baseline biological site information supporting development of a long-term management plan for the Escondido Creek Conservancy.
- **Sauvie Island/Newell Creek Canyon Biological Inventories, Metro Regional Open Spaces Division, Portland, Oregon.** Designed and conducted two biological resource inventories on County land acquisitions to provide baseline information for development of long-term management plans. Conducted comprehensive surveys for all plant, amphibian, reptile, avian, and mammal species on the Sauvie Island Complex, a 288-acre wetland site along the Multnomah Channel. Developed a map classifying all vegetative formations on the site to the

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level of alliance and association utilizing by the National Vegetation Classification (NVC). Also conducted electrofishing surveys of three miles of Newell Creek to determine presence/absence and population dynamics of threatened and endangered salmonid species. Developed management and restoration plans for this tributary of the Willamette River (2000).

- **Willamette Greenway Wildlife and Habitat Inventory, Portland Planning Bureau, Portland, Oregon.** Conducted a comprehensive natural, scenic, and recreational resource inventory of the Willamette River Greenway. The planning area, which covers the entire length of the river passing through Portland, is approximately 17 miles long and up to 2 miles wide. Conducted natural resource inventories, including assessment of fish and wildlife habitats, special status species, significant natural areas, vegetative cover, and other natural features.

Focused Biological Surveys

- **Sensitive Amphibian Surveys, Southern California Edison, San Bernardino, California.** Conducted nocturnal and diurnal surveys for sensitive amphibian species throughout the San Bernardino and San Gabriel Mountains.
- **Project 2000, Rancho Mission Viejo Company, County of Orange, California.** Conducted focused surveys for state- and federally-listed threatened or endangered plant species.
- **Newhall Ranch Project, Newhall Land and Farming Company, Los Angeles and Ventura County, California.** Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower plant species and other sensitive plants. Rare plant surveys were conducted on approximately 6,000 acres of land in 2002 and 14,500 acres of land in 2003. Also, participated in a seed collection of San Fernando Valley spineflower for the Newhall Land and Farming Company, to be used for plant research and preservation.
- **Sensitive Amphibian Surveys, El Apajo Estates, County of San Diego, California.** Conducted nocturnal relocation surveys for sensitive toad species on the 40-acre El Apajo development property located along the San Dieguito River in Rancho Santa Fe.
- **U.S. Camp Pendleton Marine Corps Base, Tributary Areas 3&8 Environmental Monitoring, County of San Diego, California.** Conducted arroyo toad and general wildlife monitoring activities on a regular basis for pipeline construction in accordance with a monitoring plan developed by Dudek.
- **Western Painted Turtle Study, Port of Portland, Portland, Oregon.** Designed and conducted study to assess painted turtle population structure, nesting behavior and nest sites, habitat use (active-season), and over-wintering sites. Performed trapping and marking surveys, telemetry surveys, and data gathering and analysis for the Western Painted Turtle. Performed extensive winter resident avifauna surveys within the Painted Turtle study areas to assess wildlife habitat potential for mitigation areas.
- **Northern Oregon Coast and Cascade Ranges Spotted Owl Surveys, Willamette Industries Inc., Albany, Oregon.** Conducted nocturnal surveys for the northern spotted owl, neotropical migrant surveys, lentic surveys for sensitive reptiles and amphibians and designed, constructed and installed nurse colony bat boxes (1998).

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- **Southwest Washington Coast and Cascade Ranges Spotted Owl Surveys, Beak Environmental Consultants, Inc., Kirkland, Washington.** Conducted nocturnal and daytime surveys for Northern Spotted Owls and Marbled Murrelets, as well as habitat assessments for other sensitive and threatened species (1997).
- **White Sands Missile Range Vegetation Mapping, White Sands, New Mexico.** Performed ground truthing surveys (for remote sensing data), basin and montane plant community surveys, and soil sampling and classification in the Organ and San Augustine Mountains, White Sands and Greater Chihuahuan Desert, New Mexico (1995-1997).
- **Baird's Sparrow and Piping Plover Study, The Nature Conservancy Cross Ranch Preserve, Hensler, North Dakota.** Designed and implemented monitoring surveys for endangered avian species. Also conducted range surveys and vegetation sampling on shortgrass prairies and saline lakeshores. Developed management plan for resident bison herds, and guided preserve tours as lead volunteer coordinator.
- **Waterfowl Surveys, City of Madison Conservation Parks, Madison, Wisconsin.** Conducted waterfowl and vegetation surveys in freshwater marshes, and developed exotic plant species management plans. Assisted with restoration planting of tallgrass prairie and development of management plans for prairie, savanna and riparian plantings (1991).
- **Gorse Moth Biological Control Experiment, Forestry Sciences Lab, Hilo, Hawaii.** Studied moth population introduction and conducted establishment surveys and analyses for control of the gorse moth. Included laboratory analysis of moth pupae and biological control report writing (1990).

Mitigation Monitoring and Reporting

- **Sewer Pump Station Upgrade, Leucadia County Water District, City of Carlsbad, California.** Conducted onsite and offsite mitigation monitoring and reporting for the project, including southern willow scrub, mulefat and freshwater marsh habitats.
- **Camino Ruiz Development, Western Pacific Housing, City of San Diego, California.** Conducted wetland mitigation monitoring and reporting for a four-acre riparian woodland and wetland scrub mitigation site in Carmel Valley.
- **Torrey Del Mar Wetland Mitigation, D.R. Horton Continental, San Diego, California.** Providing maintenance coordination, mitigation monitoring and reporting for a riparian mitigation site in McGonigle Canyon. The site is in the third year of mitigation monitoring, and includes creation of approximately 2.0 acres of southern willow scrub along a tributary to McGonigle Canyon Creek to mitigate impacts to wetlands resulting from the Torrey Del Mar housing development.
- **El Cuervo Wetland Mitigation Project (Offsite Mitigation for Sorrento Creek Flood Control Project), City of San Diego, Transportation and Drainage Design Division, San Diego, California.** Providing maintenance coordination, mitigation monitoring and reporting for a wetland mitigation site in the west end of the Los Peñasquitos Canyon Preserve. The site includes creation and restoration of approximately 14.0 acres of southern willow scrub, mule fat scrub, and freshwater marsh along the south side of Los Peñasquitos Canyon Creek.

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BIOLOGIST/ HABITAT RESTORATION SPECIALIST

- **Famosa Slough Supplemental Environmental Project, City of San Diego Metropolitan Waste Water Department, City of San Diego, California.** Conducted vegetation mapping and floristic survey of coastal salt marsh restoration project area.
- **Peñasquitos Lagoon Wetland Mitigation Monitoring, City of San Diego, San Diego, California.** Provided maintenance coordination, mitigation monitoring and reporting for a 1.2 acre riparian mitigation site in Peñasquitos Lagoon. Five-years of mitigation monitoring were completed in 2003 and the site was successfully signed-off by the resource agencies.
- **Wetland Mitigation Monitoring, Future Mountain Trust, Pauma Valley, California.** Provided wetland mitigation monitoring and reporting to the U.S. Fish and Wildlife Service and the U.S. EPA for an approximately six-acre former sand and gravel mining site located in the San Luis Rey River in Pauma Valley. The site monitoring associated with a passive restoration plan designed by DUDEK was successfully completed in October of 2003.
- **Adobe Falls Supplemental Environmental Project (SEP), San Diego, California.** Completed a biological resources assessment and designed a restoration plan and site specific erosion control plan for a four-acre riparian wetland site along Alvarado Creek in San Diego. The restoration plan was designed to fit a predetermined budget amount of \$310,000, and to meet all federal and state regulatory requirements.
- **Bryn Glen Wetland Mitigation Monitoring, San Diego, California.** Providing maintenance coordination, mitigation monitoring and reporting for a riparian mitigation site near McGonigle Canyon. The site is in the second year of mitigation monitoring, and includes creation and restoration of approximately 1.4 acres of southern willow scrub and freshwater marsh along a tributary to McGonigle Canyon Creek to mitigate for impacts to wetlands resulting from the Bryn Glen housing development.
- **Camino Ruiz Section A Wetland Mitigation Monitoring, San Diego, California.** Providing maintenance coordination, mitigation monitoring and reporting for a riparian mitigation site in McGonigle Canyon. The site is in the first year of mitigation monitoring, and includes creation and restoration of approximately 2.7 acres of southern willow scrub and freshwater marsh along a tributary to McGonigle Canyon Creek to mitigate for impacts to wetlands resulting from improvements to Camino Ruiz Road.

Utilities/Infrastructure

- **Hazard Tree Removal Project, Southern California Edison, San Bernardino and San Jacinto Mountains, Riverside and San Bernardino County, California.** Served as primary botanist. Responsible for conducting biological surveys along all Edison circuits within the San Bernardino and San Jacinto Mountains prior to removal of bark beetle infested trees, drought stressed trees, and other damaged trees from the vicinity of its poles, lines, and other facilities. The project area encompasses 106 square miles, an estimated 62,000 acres of tree removal, 22,000+ power poles and 538 linear miles of utility lines. Responsibilities include project meetings, coordinating work schedule, coordinating with Edison personnel and U.S. Forest Service biologists regarding site specific sensitivities, conducting biological surveys of all lines within San Bernardino National Forests, and writing of Biological Assessments for the U.S. Forest Service.

SCOTT BOCZKIEWICZ
BIOLOGIST/ HABITAT RESTORATION SPECIALIST

- **Southern California Edison Pole and Utilities Replacement Project, Orange, Riverside, and San Bernardino counties, California.** Served as primary botanist. Responsibilities included conducting habitat assessments for sensitive plant species at multiple locations in Orange, Riverside, and San Bernardino counties. These locations range from the Santa Ana Mountains of Orange and Riverside counties, western mountains and valleys of Riverside County, San Jacinto Mountains, Palm Springs, Coachella Valley, San Bernardino Mountains, and Apple Valley region of San Bernardino County.

Publications

- ❑ Boczkiewicz, S. and B. Martin. 1994. *Nesting Behavior of Amodramus bairdii in Northern Pothole Prairie*. *Midwest Naturalist*, Spring, v.13 n.1:37-45.

Relevant Experience

- ❑ **United States Army, Military GPS training for Mapping Applications, White Sands Missile Range, Las Cruces, New Mexico.** 1996.
- ❑ **Wetland Delineation and Hydrogeomorphic Assessment Course, Division of State Lands, Salem, Oregon.** August 1999.
- ❑ **California Society for Ecological Restoration, Eighth Annual Conference, San Diego, California.** November 1 – 3, 2001.
- ❑ **California Society for Ecological Restoration, Ninth Annual Conference, Lake Tahoe, California.** October 24-27 2002.
- ❑ **Friends of the Jepson Herbarium, Specialized Carex Seminar and Field Course, San Francisco State University, Sierra Nevada Field Campus.** August 1-3, 2003.
- ❑ **Association of Environmental Professionals, CEQA Workshop.** November 2003.
- ❑ **San Diego Natural History Museum, San Diego County Sensitive Butterfly Workshop, City of San Diego.** December 2003.
- ❑ **Friends of the Jepson Herbarium, Specialized Poaceae Seminar and Field Course, University of Berkeley Sciences Building.** May 1-2, 2004.

APPENDIX B
Vascular Plant Species Observed
Entrada Site (2002-2005)

APPENDIX B
VASCULAR PLANT SPECIES
ENTRADA SITE

FERNS

PTERIDACEAE – BRAKE FAMILY

Pellaea andromedifolia var. *andromedifolia* – coffee fern

Pentagramma triangularis – goldenback fern

CONIFERS

CUPRESSACEAE – CYPRESS FAMILY

Cupressus sp. – cypress

Juniperus californica – California juniper

PINACEAE – PINE FAMILY

* *Pinus halepensis* – Aleppo pine

Pinus sp. – pine

ANGIOSPERMAE (DICOTYLEDONES)

AMARANTHACEAE – AMARANTH FAMILY

* *Amaranthus albus* – tumbleweed

* *Amaranthus retroflexus* – rough pigweed

ANACARDIACEAE – SUMAC FAMILY

Rhus ovata – sugar-bush

Rhus trilobata – squaw bush

* *Schinus molle* – Peruvian pepper-tree

* *Shinus terebinthifolius* – Brazilian pepper-tree

Toxicodendron diversilobum – poison-oak

APIACEAE – CARROT FAMILY

Apiastrum angustifolium – wild celery

Bowlesia incana – American bowlesia

Daucus pusillus – rattlesnake weed

Lomatium utriculatum – common lomatium

APPENDIX B (*Cont.*)

ASCLEPIADACEAE – MILKWEED FAMILY

- Asclepias californica* – California milkweed
- Asclepias eriocarpa* – Indian milkweed
- Asclepias fascicularis* – narrow-leaf milkweed

ASTERACEAE – SUNFLOWER FAMILY

- Acourtia microcephala* – sacapellote
- Ambrosia acanthicarpa* – annual burweed
- Ambrosia confertifolia* – weak-leaved burweed
- Ambrosia psilostachya* – western ragweed
- * *Arctotheca calendula* – capeweed
- Artemisia californica* – coastal sagebrush
- Artemisia douglasiana* – California mugwort
- Artemisia dracunculus* – tarragon
- Artemisia tridentata* – Great Basin sagebrush
- Baccharis pilularis* – coyote brush
- Baccharis salicifolia* – mule fat
- Baccharis sarothroides* – chaparral broom
- Brickellia californica* – California brickellbush
- Brickellia nevinii* – Nevin’s brickellbush
- * *Carduus pycnocephalus* – Italian thistle
- * *Centaurea melitensis* – star thistle
- Chaenactis glabriuscula* – yellow pincushion
- * *Chamomilla suaveolens* – pineapple weed
- Chrysothamnus* sp. – rabbitbrush
- Chrysothamnus nauseosus* – rubber rabbitbrush
- Cirsium occidentale* var. *californicum* – California thistle
- Cirsium occidentale* var. *occidentale* – cobwebby thistle
- * *Cirsium vulgare* – bull thistle
- * *Cnicus benedictus* – blessed thistle
- Conyza canadensis* – common horseweed
- Conyza coulteri* – Coulter’s horseweed
- Coreopsis bigelovii* – tickseed
- * *Cotula australis* – cotula
- * *Cotula coronopifolia* – African brass-buttons
- Deinandra (Hemizonia) fasciculata* – fascicled tarweed

APPENDIX B (*Cont.*)

- * *Dimorphotheca sinuata* – African daisy
- Encelia actoni* – Acton’s encelia
- Encelia californica* – California bush sunflower
- Encelia farinosa* – brittlebush, incensio
- Ericameria palmeri* var. *pachylepis* – Palmer’s goldenbush
- Ericameria linearifolia* – narrowleaf goldenbush
- Erigeron foliosus* – leaf daisy
- Eriophyllum confertiflorum* – long-stem golden yarrow
- Euthamia occidentalis* – western goldenrod
- Filago californica* – California fluffweed
- Gnaphalium californicum* – California everlasting
- Gnaphalium canescens* ssp. *microcephalum* – white everlasting
- * *Gnaphalium luteo-album* – white cudweed
- Gnaphalium palustre* – lowland cudweed
- Hazardia squarrosa* ssp. *grindelioides* – saw-toothed goldenbush
- Helianthus annuus* – common sunflower
- Heterotheca grandiflora* – telegraph weed
- Heterotheca sessiliflora* – golden aster
- * *Hypochaeris glabrata* – smooth cats ear
- Isocoma menziesii* – goldenbush
- * *Lactuca serriola* – prickly lettuce
- Lasthenia californica* – coast goldfields
- Lasthenia glabrata* ssp. *coulteri* – Coulter’s goldfields
- Layia platyglossa* – common tidy-tips
- Lepidospartum squamatum* – scale-broom
- Lessingia filaginifolia* – California aster
- Lessingia filaginifolia* var. *filaginifolia* – California aster
- Lessingia glandulifera* – valley vinegar-weed
- Madia gracilis* – slender tarweed
- Malacothrix saxatilis* var. *commutata* – cliff desertydandelion
- Malacothrix saxatilis* var. *tenuifolia* – cliff malacothrix
- * *Matricaria matricarioides* – pineapple weed
- Osmadenia tenella* – southern rosinweed
- * *Picris echioides* – bristly ox-tongue
- Pluchea sericea* – arrow weed
- Rafinesquia californica* – California chicory

APPENDIX B (*Cont.*)

- Senecio californica* – California groundsel
- Senecio flaccidus* var. *douglasii* – butterweed
- * *Senecio vulgaris* – common groundsel
- * *Silybum marianum* – milk thistle
- * *Sonchus asper* – prickly sow-thistle
- * *Sonchus oleraceus* – common sow-thistle
- Stebbinsoseris heterocarpa* – grassland stebbinsoseris
- Stephanomeria virgata* – twiggy wreathplant
- Stylocline gnaphalioides* – everlasting nest-straw
- Tetradymia comosa* – cotton thorn
- Uropappus lindleyi* – silver puffs
- Xanthium spinosum* – spiny cocklebur
- Xanthium strumarium* – cocklebur

BORAGINACEAE – BORAGE FAMILY

- Amsinckia menziesii* var. *intermedia* – common fiddleneck
- Amsinckia menziesii* var. *menziesii* – rigid fiddleneck
- Amsinckia tessellata* var. *tessellata* – devil’s lettuce
- Cryptantha* sp. – forget-me-not
- Cryptantha intermedia* – common forget-me-not
- Cryptantha micrantha* – purple root cryptantha
- Cryptantha microstachys* – Tejon cryptantha
- Cryptantha muricata* – prickly cryptantha
- Cryptantha nevadensis* – Nevada catseye
- Heliotropium curassavicum* – wild heliotrope
- Pectocarya linearis* – slender pectocarya
- Pectocarya penicillata* – winged pectocarya
- Pectocarya setosa* – pectocarya
- Plagiobothrys* sp. – popcorn flower
- Plagiobothrys arizonicus* – Arizona popcornflower
- Plagiobothrys canescens* – valley popcornflower
- Plagiobothrys collinus* – California popcornflower
- Plagiobothrys fulvus* – fulvous popcornflower
- Plagiobothrys nothofulvus* – rusty popcornflower

APPENDIX B (*Cont.*)

BRASSICACEAE – MUSTARD FAMILY

- * *Brassica nigra* – black mustard
- * *Capsella bursa-pastoris* – shepard's purse
- * *Cardaria draba* – heart-podded hoary cress
- Erysimum capitatum* ssp. *capitatum* – western wallflower
- * *Hirschfeldia incana* – short-podded mustard
- Lepidium virginicum* – wild peppergrass
- * *Raphanus sativus* – wild radish
- * *Rorippa nasturtium-aquaticum* – water cress
- * *Sisymbrium irio* – London rocket
- * *Sisymbrium orientale* – Oriental mustard
- Thysanocarpus curvipes* – hairy fringepod
- Thysanocarpus laciniatus* – lacepod
- Tropidocarpum gracile* – slender dobie-pod

CACTACEAE – CACTUS FAMILY

- Opuntia basilaris* var. *basilaris* – beavertail
- Opuntia californica* var. *parkeri* – cane cholla
- * *Opuntia ficus-indica* – Indian-fig
- Opuntia littoralis* – coastal prickly-pear
- Opuntia parryi* – snake cholla

CAPPARACEAE – CAPER FAMILY

- Isomeris arborea* – bladderpod

CAPRIFOLIACEAE – HONEYSUCKLE FAMILY

- Lonicera subspicata* – southern honeysuckle
- Sambucus mexicana* – Mexican elderberry

CARYOPHYLLACEAE – PINK FAMILY

- Loeflingia squarrosa* – California loeflingia
- * *Silene gallica* – common catchfly
- Spergularia* sp. – sand-spurrey
- * *Spergularia rubra* – sand-spurrey
- * *Stellaria media* – common chickweed

APPENDIX B (*Cont.*)

CHENOPODIACEAE – GOOSEFOOT FAMILY

- Atriplex canescens* – four-winged saltbush
- * *Atriplex heterosperma* – weedy orache
- Atriplex lentiformis* – big saltbush
- * *Atriplex rosea* – redscale
- * *Atriplex semibaccata* – Australian saltbush
- Atriplex serenana* var. *serenana* – bractscale
- * *Atriplex suberecta* – peregrine saltbush
- * *Bassia hyssopifolia* – five-hooked bassia
- * *Chenopodium album* – lamb's quarters
- * *Chenopodium ambrosioides* – Mexican tea
- Chenopodium berlandieri* – pitseed goosefoot
- Chenopodium californicum* – California goosefoot
- * *Chenopodium murale* – nettle-leaved goosefoot
- Chenopodium* sp. – chenopod
- * *Salsola tragus* – Russian-thistle

CONVOLVULACEAE – MORNING-GLORY FAMILY

- Calystegia macrostegia* ssp. *cyclostegia* – morning-glory
- Calystegia peirsonii* – Peirson's morning-glory
- * *Convolvulus arvensis* – bindweed

CRASSULACEAE – STONECROP FAMILY

- Crassula connata* – dwarf stonecrop
- Dudleya lanceolata* – lanceleaf dudleya

CUCURBITACEAE – GOURD FAMILY

- Cucurbita foetidissima* – coyote-melon, calabazilla
- Marah horridus* – Sierran wild cucumber
- Marah macrocarpus* – wild cucumber

CUSCUTACEAE – DODDER FAMILY

- Cuscuta californica* – California dodder

EUPHORBIACEAE – SPURGE FAMILY

- Chamaesyce albomarginata* – rattlesnake spurge

APPENDIX B (*Cont.*)

Chamaesyce polycarpa – small-seed sand mat
Croton californicus – California croton
Eremocarpus setigerus – doveweed
Stillingia linearifolia – linear-leaved stillingia

FABACEAE – PEA FAMILY

Astragalus didymocarpus – common dwarf locoweed
Astragalus gambelianus – Gambell's dwarf locoweed
Astragalus trichopodus var. *phoxus* – Santa Barbara locoweed
Lotus hamatus – grab lotus
Lotus humistratus – hill lotus
Lotus purshianus – Spanish-clover
Lotus salsuginosus – coastal lotus
Lotus scoparius – deerweed
Lotus strigosus – strigose deerweed
Lotus wrangelianus – Chilean birds-foot trefoil
Lupinus bicolor – Lindley's annual lupine
Lupinus excubitus var. *hallii* – grape soda lupine
Lupinus formosus var. *formosus* – lupine
Lupinus hirsutissimus – stinging lupine
Lupinus microcarpus – chick lupine
Lupinus microcarpus var. *densiflorus* – chick lupine
Lupinus sparsiflorus – Coulter's lupine
Lupinus succulentus – arroyo lupine
Lupinus truncatus – collar lupine
* *Medicago polymorpha* – California burclover
* *Melilotus alba* – white sweet-clover
* *Melilotus indica* – yellow sweet-clover
* *Robinia pseudoacacia* – black locust
Trifolium albopurpureum – Indian clover
Trifolium ciliolatum – tree clover
Trifolium gracilentum – pinpoint clover
Trifolium hirtum – rose clover
Trifolium sp. – clover
Trifolium willdenovii – valley clover
* *Vicia villosa* – winter vetch

APPENDIX B (*Cont.*)

FAGACEAE – BEECH FAMILY

Quercus agrifolia – coast live oak

Quercus berberidifolia – scrub oak

Quercus berberidifolia x *lobata*

Quercus c.f. *douglasii* – blue oak

Quercus lobata – valley oak

* *Quercus ilex* – holly oak

GERANIACEAE – GERANIUM FAMILY

* *Erodium botrys* – broad-lobed filaree

* *Erodium cicutarium* – red-stemmed filaree

* *Erodium moschatum* – white-stemmed filaree

GROSSULARIACEAE – CURRANT FAMILY

Ribes aureum – golden currant

HYDROPHYLLACEAE – WATERLEAF FAMILY

Emmenanthe penduliflora – whispering bells

Eriodictyon crassifolium var. *nigrescens* – yerba santa

Eucrypta chrysanthemifolia – common eucrypta

Phacelia cicutaria – caterpillar phacelia

Phacelia distans – blue fiddleneck

Phacelia imbricata – imbricate phacelia

Phacelia minor – wild canterbury-bell

Phacelia ramosissima – shrubby phacelia

Phacelia tanacetifolia – tansy-leaved phacelia

JUGLANDACEAE – WALNUT FAMILY

Juglans californica – southern California black walnut

LAMIACEAE – MINT FAMILY

* *Marrubium vulgare* – horehound

Salvia apiana – white sage

Salvia columbariae – chia

Salvia leucophylla – purple sage

APPENDIX B (*Cont.*)

Salvia mellifera – black sage

Trichostema lanceolatum – vinegar weed

MALVACEAE – MALLOW FAMILY

Malacothamnus fasciculatus – mesa bushmallow

* *Malva parviflora* – cheeseweed

NYCTAGINACEAE – FOUR O'CLOCK FAMILY

Mirabilis californica – California wishbone-bush

OLEACEAE – OLIVE FAMILY

* *Ligustrum lucidum* – glossy privet

ONAGRACEAE – EVENING-PRIMROSE FAMILY

Camissonia bistorta – California sun cup

Camissonia boothii var. *decorticans* – shredding evening primrose

Camissonia californica – mustard primrose

Camissonia hirtella – field suncup

Camissonia micrantha – miniature suncup

Camissonia robusta – robust suncup

Clarkia purpurea – winecup clarkia

Clarkia speciosa – red-spotted clarkia

Clarkia unguiculata – elegant clarkia

Epilobium brachycarpum – annual fireweed

Epilobium canum – California fuchsia

PAEONIACEAE – PEONY FAMILY

Paeonia californica – California peony

PAPAVERACEAE – POPPY FAMILY

Eschscholzia californica – California poppy

Platystemon californicum – cream cups

PLANTAGINACEAE – PLANTAIN FAMILY

Plantago erecta – dot-seed plantain

* *Plantago lanceolata* – English plantain

APPENDIX B (*Cont.*)

- * *Plantago major* – common plantain
- * *Plantago ovata* – woolly plantain

POLEMONIACEAE – PHLOX FAMILY

- Eriastrum densifolium* ssp. *densifolium* – dense eriastrum
- Eriastrum densifolium* ssp. *elongatum* – dense eriastrum
- Eriastrum sapphirinum* – sapphire eriastrum
- Gilia angelensis* – angel gilia
- Gilia capitata* – ball gilia
- Leptodactylon californicum* – prickly phlox
- Linanthus androsaceus* – common linanthus
- Linanthus liniflorus* – narrowflower flaxflower
- Linanthus parviflorus* – false babystars
- Navarretia atractyloides* – holly-leaf skunkweed

POLYGONACEAE – BUCKWHEAT FAMILY

- Chorizanthe parryi* var. *fernandina* – San Fernando Valley spineflower
- Chorizanthe staticoides* – turkish rugging
- Eriogonum elongatum* – long-stemmed buckwheat
- Eriogonum fasciculatum* ssp. *foliolosum* – California buckwheat
- Eriogonum foliosum* – leafy buckwheat
- E. gracile* var. *gracile* – slender woolly buckwheat
- Eriogonum viridescens* – twotooth buckweat
- Lastarriaea coriacea* – lastarriaea
- * *Polygonum arenastrum* – common knotweed
- Pterostegia drymarioides* – California threadstem
- Rumex hymenosepalus* – desert rhubarb
- * *Rumex crispus* – curly dock

PORTULACACEAE – PURSLANE FAMILY

- Calandrinia ciliata* – redmaids
- Claytonia parviflora* – miner's lettuce
- Claytonia perfoliata* – miner's lettuce
- * *Portulaca oleracea* – common purslane

APPENDIX B (*Cont.*)

RANUNUCULACEAE – BUTTERCUP FAMILY

- Clematis ligusticifolia* – yerba de chiva
- Delphinium parryi* ssp. *parryi* – Parry's larkspur

RHAMNACEAE – BUCKTHORN FAMILY

- Ceanothus crassifolius* – hoary-leaved ceanothus
- Rhamnus crocea* – redberry
- Rhamnus ilicifolia* – holly-leaf redberry

ROSACEAE – ROSE FAMILY

- Adenostoma fasciculatum* – chamise
- Cercocarpus betuloides* var. *betuloides* – birch-leaf mountain-mahogany
- Cercocarpus betuloides* var. *blancheae* – island mountain-mahogany
- Fragaria* sp. – strawberry
- Heteromeles arbutifolia* – toyon
- Prunus ilicifolia* – holly-leaf cherry

RUBIACEAE – MADDER FAMILY

- * *Galium aparine* – goose grass
- Galium angustifolium* – narrow-leaved bedstraw
- Galium porrigens* – climbing bedstraw

SALICACEAE – WILLOW FAMILY

- Populus fremontii* – Fremont's cottonwood
- Salix exigua* – narrow-leaved willow
- Salix laevigata* – red willow
- Salix lasiolepis* – arroyo willow

SAURURACEAE – LIZARD'S-TAIL FAMILY

- Anemopsis californica* – yerba mansa

SCROPHULARIACEAE – FIGWORT FAMILY

- Castilleja exserta* – common owl's-clover
- Castilleja foliolosa* – indian painbrush
- Keckiella cordifolia* – heart-leaf penstemon
- Mimulus aurantiacus* – bush monkeyflower

APPENDIX B (*Cont.*)

- Penstemon centranthifolius* – scarlet bugler
* *Veronica anagalis-aquatica* – water speedwell

SOLANACEAE – NIGHTSHADE FAMILY

- Datura wrightii* – western jimsonweed
* *Nicotiana glauca* – tree tobacco
Solanum americanum – small-flowered nightshade
Solanum parishii – nightshade
Solanum xanti – chaparral nightshade

STERCULIACEAE – CACAO FAMILY

- * *Fremontodendron californicum* x *mexicanum* – flannelbush cultivar (ornamental planting observed adjacent to Magic Mountain theme park)

TAMARICACEAE – TAMARISK FAMILY

- * *Tamarix ramosissima* – Mediterranean tamarisk

URTICACEAE – NETTLE FAMILY

- Urtica dioica* – giant creek nettle
* *Urtica urens* – dwarf nettle

VIOLACEAE – VIOLET FAMILY

Viola pedunculata – Johnny jump-up

VITACEAE – GRAPE FAMILY

Parthenocissus vitacea – woodbine

ZYGOPHYLLACEAE – CALTROP FAMILY

- * *Tribulus terrestris* – puncture vine

ANGIOSPERMAE (MONOCOTYLEDONES)

CYPERACEAE – SEDGE FAMILY

Cyperus esculentus – nutsedge

APPENDIX B (*Cont.*)

LILIACEAE – LILY FAMILY

- Bloomeria crocea* – common goldenaster
- Brodiaea terrestris* ssp. *kernensis* – brodiaea
- Calochortus* c.f. *catalinae* – Catalina mariposa lily
- Calochortus* c.f. *plummerae* – Plummer's mariposa lily
- Calochortus clavatus* var. *gracilis* – slender mariposa lily
- Calochortus venustus* – mariposa lily
- Chlorogalum pomeridianum* – wavy-leaf soap-plant
- Dichelostemma capitatum* – blue dicks
- Muilla maritima* – common muilla
- Yucca schidigera* – Mohave yucca
- Yucca whipplei* – Our Lord's candle

POACEAE – GRASS FAMILY

- * *Avena barbata* – slender oat
- * *Avena fatua* – wild oat
- * *Avena sativa* – cultivated oat
- Bromus arizonicus* – Arizona chess
- Bromus catharticus* – rescue grass
- * *Bromus diandrus* – ripgut grass
- * *Bromus hordeaceus* – soft chess
- * *Bromus madritensis* ssp. *rubens* – foxtail chess
- * *Bromus sterilis* – poverty brome
- * *Bromus tectorum* – cheat grass
- * *Cynodon dactylon* – Bermuda grass
- Distichlis spicata* – salt grass
- Elymus glaucus* – western wild rye
- Hordeum brachyantherum* – meadow barley
- * *Hordeum murinum* – glaucous foxtail barley
- * *Hordeum vulgare* – cultivated barley
- * *Lamarckia aurea* – goldentop
- Leptochloa uninervia* – Mexican sprangletop
- Leymus tritocoides* – beardless wild rye
- Melica imperfecta* – California melic
- Nassella cernua* – nodding needlegrass
- Nassella lepida* – foothill stipa

APPENDIX B (Cont.)

- Nassella pulchra* – purple needlegrass
- * *Piptatherum miliaceum* – smilo grass
- Poa secunda* – Malpais bluegrass
- Polypogon interruptus* – ditch beard grass
- * *Polypogon monspeliensis* – rabbit's-foot grass
- * *Schismus barbatus* – abumashi
- * *Triticum aestivum* – cereal wheat
- Vulpia microstachys* – small fescue
- * *Vulpia myuros* – rattail fescue

TYPHACEAE – CATTAIL FAMILY

Typha latifolia – broad-leaved cattail

- * signifies introduced (non-native) species

DAVID FLIETNER

BIOLOGIST

Education

- M.S., Botany, University of Florida (1987)
- B.S., Plant Science, University of California, Davis (1983)
- GIS Certificate, University of California, Riverside extension (1996)

Registration/Certifications

- County of San Diego Approved Biologist
- Quino checkerspot butterfly, USFWS Permit #TE-008031
- Licensed Agricultural Pest Control Advisor #4577 (weed control)
- Qualified Applicator License #31356 (landscape, agriculture, and aquatic)
- Certified for flat-tailed horned lizard surveys, BLM (2001)
- Certificate of Educational Achievement in Revegetation/ Restoration Planning, California Society for Ecological Restoration (2001)
- Certificate of Completion, Desert Tortoise Council Surveying, Monitoring and Handling Techniques Workshop (2002)

Affiliations

- California Invasive Plant Council
- California Native Plant Society
- Southern California Botanists

Experience

Mr. Flietner is a biologist with nine years experience conducting biological resource surveys, endangered species presence/absence surveys, wetland delineations, and construction and restoration monitoring. Biological resource survey experience includes vegetation mapping, floristic inventories, and focused surveys for sensitive plant species, arroyo toad, and flat-tailed horned lizard. He conducts surveys for Quino checkerspot butterfly, San Diego fairy shrimp, and Riverside fairy shrimp. His experience includes wetlands delineations in accordance with U.S. Army Corps of Engineers guidelines and applications for Clean Water Act Section 401 and 404 permits and California Department of Fish and Game Streambed Alteration agreements. In addition, he performs qualitative and quantitative assessments of revegetation projects; writes biological technical reports, wetland delineation reports, habitat restoration plans and annual progress reports. He has conducted annual pesticide training for field applicators and nursery workers in Spanish and has written pest control recommendations for habitat restoration projects.

Electric Utility/Fiber Optics/Energy

- **Los Angeles to San Diego Fiber-Optic Line, Southern Portion, San Diego County, California.** San Diego Gas and Electric. Conducted floristic inventory, vegetation mapping, and focused surveys for Quino checkerspot butterfly in vicinity of seven “pull sites” for line stringing operation. Prepared biological letter report summarizing results of surveys.

Water/Wastewater/Reclaimed Water

- **Potential Reservoir Sites, San Diego County, California.** Conducted focused presence/absence surveys for Quino checkerspot butterfly at three potential reservoir sites for Otay Water District. Prepared report according to U.S. Fish and Wildlife Service requirements.

DAVID FLIETNER
BIOLOGIST

- **Oceanside Country Club Site, City of Oceanside, Oceanside, California.** Conducted vegetation mapping, floristic inventory, and post-impact assessment for sewer repair operations. Prepared biological technical report assessing impacts to wetland habitats, and conceptual wetlands mitigation and monitoring plan. Prepared Section 1601 Streambed Alteration Agreement, Section 404 Nationwide Permit application, and Section 401 Regional Water Quality Board permit application.
- **Rose and Tecolote Creek Clean Beaches Initiative Project, City of San Diego Stormwater and Pollution Prevention Program, San Diego, California.** Conducted vegetation mapping, floristic inventory, and wetlands delineation for two pipeline projects to recirculate water in Mission Bay Regional Park. Prepared biological technical resources report, pre-construction notification under Nationwide Permit 12, Coastal Development Permit application to California Coastal Commission, and Section 401 application to Regional Water Quality Control Board.

Flood Control/Flood Storage/Stormwater

- **Gavilan Hills/Smith Road Channel and Sediment Basin, Riverside County, California.** Riverside County Flood Control and Water Conservation District. Mapped vegetation communities, conducted floristic inventory, and delineated wetlands in 71-acre project site. Prepared biological technical report including potential onsite mitigation for project impacts for Riverside County Flood Control and Water Conservation District.
- **County Line Channel Project, San Bernardino and Riverside Counties, California.** Riverside County Flood Control and Water Conservation District. Mapped vegetation communities, conducted floristic inventory, identified potential Delhi sands flower-loving fly habitat, and identified occupied burrow owl habitat in approximately 2.5 linear mile project area. Prepared biological technical report including results of focused surveys for Delhi sands flower-loving fly surveys for Riverside
- **Santa Ana River Maintenance Project, Riverside, California.** Riverside County Flood Control and Water Conservation District. Mapped vegetation communities in approximately 500-acre flood control channel project area. Identified potential habitat of Santa Ana woolly-star and slender-horned spineflower. Prepared biological technical report describing resources and avoidance, minimization, and mitigation measures to be implemented in long-term flood control channel maintenance program.
- **Wildrose Business Park Regional Drainage Facility, Riverside County, California.** Ridge Properties, LLC. Mapped vegetation communities, conducted floristic inventory, and performed wetlands delineation for approximately 1700 linear feet storm drain project. Prepared biological technical report and 1601 Streambed Alteration Agreement for project.
- **Cloverdale Leasehold, Escondido, California.** County of San Diego Water Department. Performed wetland delineation on 90-acre parcel adjacent to Escondido Creek for renewal of leased property. Wrote biological letter report describing results of wetlands delineation, property use plan, and conceptual wetlands mitigation plan, including recommendation for control of *Lepidium latifolium*.

Transportation

- **Wilson Creek Crossing, San Diego County, California.** County of San Diego Department of Public Works. Mapped vegetation communities, conducted floristic inventory, performed wetlands delineation, and conducted presence/absence surveys for arroyo toad. Prepared biological technical report, conceptual wetlands mitigation and monitoring plan, Nationwide Permit 39 notification, and Section 1601 Agreement for San Diego County Water Department.
- **Gird Road Crossing, San Diego County, California.** County of San Diego Department of Public Works. Mapped vegetation communities, conducted arroyo toad habitat assessment, floristic inventory, and wetlands delineation for San Diego Public Works Department. Prepared biological technical report including conceptual mitigation plan for impacts to CDFG-jurisdictional riparian vegetation.
- **Linda Vista Drive Realignment, San Marcos, California.** Nolte Associates and City of San Marcos. Mapped vegetation communities, delineated jurisdictional wetlands, and assessed the potential for rare wildlife and plant species on an 80-acre site. Prepared biological technical report analyzing impacts and mitigation measures for a total of nine alternatives involving construction or extension of four different roads. Responded to resource agency comments, including a reanalysis of new impacts and integration with a related development.

Schools

- **San Diego Jewish Academy, San Diego, California.** San Diego Jewish Academy. Monitored habitat coastal sage scrub and riparian, and restoration and wart-stemmed ceanothus revegetation projects for first two years of five-year implementation plan. Conducted quantitative and qualitative analysis and prepared two annual progress reports comparing site conditions with performance criteria. Recommended and monitored additional maintenance measures, seeding, and plantings.

Master-Planned Communities

- **Riverside County Agricultural Preserve, Riverside County, California.** Conducted habitat mapping, and biological resource inventory, including potential Delhi sands flower-loving fly habitat for proposed mixed-use development of 8,000 acre area. Prepared constraints analysis report including recommendations to avoid impacts to least Bell's vireo and southern willow flycatcher critical habitat.

KAMARUL MURI

BIOLOGIST/ENVIRONMENTAL SPECIALIST

Education

- B.S., Ecology Behavior and Evolution, University of California, San Diego (2001)

Registration/Certifications

- US Fish and Wildlife Service Quino checkerspot 10(a) Permit # TE051250-0; issued 3/04/2002, expires 03/03/2006
- California Department of Fish and Game Rare, Threatened and Endangered Plant Voucher Collecting Permit # 05077; issued 3/10/2003, expires 3/10/2006

Relevant Experience

- Attended San Diego Natural History Museum class "*Sensitive Butterflies of San Diego County*" in December, 2003. The class specialized in the biology and identification of the nine most sensitive butterfly species in San Diego County.
- Attended Association of Environmental Professionals "CEQA Basics" seminar in November, 2003.
- Attended Building Industry Association seminar on Storm Water Sampling and Analysis Strategy in March, 2003.

Experience

Mr. Muri has more than three years experience as a consultant and field biologist through involvement in a wide array of projects in San Diego, Riverside, Orange, Los Angeles and San Bernardino counties. Project experience includes biological resource surveys; data collection and analysis; California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation; environmental assessments; wetlands permitting, mitigation design and monitoring; and endangered species surveys. Projects include issues relative to the California Coastal Act, the California Fish and Game Code, the federal Clean Water Act (Sections 401 and 404), the Rivers and Harbors Act, the Coastal Zone Management Act, the Migratory Bird Treaty Act, federal Endangered Species Act (fESA) and state Endangered Species Act (sESA). Mr. Muri currently holds a federal permit to conduct surveys for the federally-listed endangered adult Quino checkerspot butterfly and is working towards obtaining a permit to conduct surveys for the federally-listed threatened coastal California gnatcatcher.

Transportation

- **Rancho Santa Fe Road Realignment and Bridge Construction Project, City of Carlsbad, California.** Conducting biological monitoring of construction and ensuring compliance with resource permits during construction of the project. Resource permits issued for the project involve the federally-listed threatened coastal California gnatcatcher and wetlands regulated by the California Department of Fish and Game, the U.S. Army Corps of Engineers and the California Regional Water Quality Control Board. Also assisted with breeding season surveys to monitor nesting activity of gnatcatcher pairs located adjacent to the project.
- **Brown-headed Cowbird Trapping Program, Sprinter Project, North County Transit District, City of Oceanside, California.** Assisted in the daily operation and maintenance of a cowbird trapping program along Loma Alta Creek in the City of Oceanside. Program implementation was required by the U.S. Fish and Wildlife Service (USFWS) as mitigation for impacts to habitat for sensitive native bird species. Also assisted in gathering and analyzing program results for the submission of an annual report to USFWS.

KAMARUL MURI
BIOLOGIST/ENVIRONMENTAL SPECIALIST

- **Oceanside to Escondido Bikeway Project, North County Transit District, Cities of Vista and San Marcos, California.** Monitored the removal of wetlands vegetation associated with construction activities for the project.
- **Surveys for Sensitive Amphibian Species, U.S. Forest Service, San Bernardino Mountains, California.** Conducted diurnal and nocturnal surveys for California red-legged frog and mountain yellow-legged frog in support of a Forest Service trail construction project in the San Bernardino National Forest.

Flood Control/Flood Storage

- **Salt Creek Channel Widening Project, Riverside County Flood Control and Water Conservation District, Riverside County, California.** Conducted surveys of an existing smooth tarplant population to identify areas most suitable for translocation in support of a channel widening project. Helped to prepare specifications for the translocation effort and coordinated seed collection.
- **Perris Valley Lateral 'B' Stage 2 Project, Riverside County Flood Control and Water Conservation District, Riverside County, California.** Conducted biological resource mapping, a delineation of jurisdictional wetlands and prepared a biological resources technical report in support of the channel widening project. Project impacts to jurisdictional areas were processed with a joint permit application for compliance with Section 1600 of the California Fish and Game Code, Sections 401 and 404 of the federal Clean Water Act (CWA). Compliance with Section 404 of the federal CWA was achieved through the use of several Nationwide Permits for project-related improvements to roads and utilities.

Water/Wastewater/Reclaimed Water

- **Non-potable Water Distribution System Project, Yucaipa Valley Water District, Riverside and San Bernardino Counties, California.** Conducted vegetation mapping and a jurisdictional wetlands delineation within a six-mile study area along San Timoteo Creek and evaluated impacts to undeveloped areas over approximately 200,000 linear feet of proposed non-potable water pipeline. Documents prepared in support of the project include a biological resources technical report and wetlands permit applications. Provided assistance in preparing the Draft Environmental Impact Report/ Environmental Impact Statement in accordance with the California Environmental Policy Act and the National Environmental Protection Act. Used aerial photographs to estimate historical vegetation density within San Timoteo Creek over a 42-year period to support the design of a Habitat Monitoring Program based on adaptive management principles.
- **Salt Creek Sewer Project, City of Chula Vista, California.** Monitored sewer construction and conducted breeding season monitoring for California gnatcatcher, focused surveys for burrowing owl, and focused surveys for Quino checkerspot butterfly along the 11-mile Salt Creek gravity sewer project along the north edge of the Otay River Valley.
- **San Diego Pipeline No. 6, Metropolitan Water District of Southern California, Riverside County, California.** The project consists of a 30-mile nine-foot diameter water conveyance pipeline. Mr.

KAMARUL MURI

BIOLOGIST/ENVIRONMENTAL SPECIALIST

Muri provided assistance in conducting habitat assessments for sensitive and federally-listed wildlife species.

- **Moreno-Lakeside Pipeline, San Diego County Water Authority, San Diego County, California.** Assisted with breeding season monitoring of coastal California gnatcatcher located adjacent to the project.

Electric Utility/Energy

- **Hazard Tree Removal Project, Southern California Edison, San Bernardino, San Gabriel, and Santa Rosa Mountains, California.** Conducting wildlife surveys, botanical surveys, habitat assessments and surveys for sensitive and U.S. Forest Service Threatened, Endangered, and Sensitive species throughout the San Bernardino, San Gabriel and Santa Rosa Mountains along Southern California Edison power line routes. The surveys are supporting implementation of a Bark Beetle tree removal project along existing power lines within Riverside and San Bernardino County.
- **Southern California Edison Utility Pole Maintenance Project, San Bernardino and San Gabriel Mountains, California.** Monitored pole maintenance activities in biologically sensitive areas to ensure avoidance of impacts to potentially-occurring sensitive and U.S. Forest Service Threatened, Endangered and Sensitive species.

Schools

- **Cathedral High School Project, Catholic Diocese of San Diego, City of San Diego, California.** Processed wetlands permitting package for the high school project to obtain authorization for impacts to jurisdictional waters under Section 401/404 of the federal Clean Water Act and Section 1603 of the California Fish and Game Code. Also responsible for monitoring construction and ensuring compliance with resource permits during construction of the project.

Recreation

- **La Borde Canyon Off-Highway Vehicle Park Study.** Assisted with installation and implementation of 20 reptile pit-fall trap arrays within the 2,600-acre study area.

Residential

- **Beach Street Project, Taylor Woodrow Homes, City of Encinitas, California.** Project manager for an 8.3-acre single- and multi-family residential development project on Requeza Street in the City of Encinitas. Conducted biological surveys and prepared a biological resources technical report to support environmental processing of the project pursuant to CEQA. Other tasks managed as part of the project included gaining approval from the City and the California Department of Fish and Game for encroachment into the 50-foot wetlands buffer required according to City guidelines, preparing an application for a Section 1603 Streambed Alteration Agreement to authorize habitat enhancement activities within wetlands onsite, and coordinating the completion of pre-construction nesting bird surveys.

KAMARUL MURI
BIOLOGIST/ENVIRONMENTAL SPECIALIST

- **El Apajo Estates Development Project Sensitive Amphibian Surveys, Rancho Santa Fe, California.** Assisted with nocturnal relocation surveys for sensitive toad species on the 40-acre El Apajo development property located along the San Dieguito River in Rancho Santa Fe.
- **Mediterranean Village Residential Development, City of San Diego, California.** Provided biological resource mapping, wetlands delineation, and impact analysis pursuant to CEQA.
- **Trabuco Canyon Private Residence Project, County of Orange, California.** Conducted general biological reconnaissance surveys and focused surveys for California gnatcatcher within an undeveloped property near Trabuco Canyon in southern Orange County. Preparing a biological resources technical report to support development permit application.
- **Costa Del Sol Project, Barratt American, City of San Diego, California.** Monitoring construction activities adjacent to sensitive native habitats to be preserved within the Multiple Habitat Planning Area of the City of San Diego's Multiple Species Conservation Program.
- **White Horse Estates Project, Barratt American, City of San Diego, California.** Monitoring construction activities adjacent to sensitive native habitats to be preserved within the Multiple Habitat Planning Area of the City of San Diego's Multiple Species Conservation Program.

Master Planned

- **Newhall Ranch Rare Plant Surveys, Newhall Ranch and Farming Company, Los Angeles and Ventura Counties, California.** Conducted focused surveys for the state-listed endangered San Fernando Valley spineflower and other sensitive plants on approximately 6,000 acres in 2002 and 14,500 acres in 2003. In addition, collected San Fernando Valley spineflower seed from nine occurrences on Newhall Ranch.

Preserve Areas

- **Rancho Mission Viejo Preserve Area, Mission Viejo, Orange County, California.** Conducted focused surveys for California gnatcatcher within a 5,000-acre preserve area in southern Orange County, California.
- **Proposed Wilson Valley Mitigation Bank, Riverside County, California.** Conducted focused surveys for Quino checkerspot butterfly within a 1,000 acre property along Wilson Creek in Riverside County as part of an evaluation of the area as a mitigation bank.

Habitat Conservation Plans

- **Western Riverside County Multiple Species and Habitat Conservation Plan, County of Riverside, California.** Assisted in the document research and preparation of species accounts for endangered, threatened, sensitive and other key species in the County of Riverside.

CHRISTOPHER E. OESCH

HABITAT RESTORATION SPECIALIST

Education

- M.S., Environmental Systems; International Development Technology, Humboldt State University Arcata, California (2003)
- B.A., International Agriculture, Eastern Mennonite University (1998)

Thesis Work

Mr. Oesch's thesis work focused on Hardscape Stream Channel Naturalization. The thesis examines modification of cement channelized stream sections, commonly found in urban settings, for mitigating their negative impacts to native plant and animal populations. This is achieved by incorporating aspects of natural stream hydrology and morphology into an existing hardscape channel. This approach is intended for improving habitat in existing hardscape channels when total removal of the hardscape structure is not an option. The thesis was modeled for the hardscape channel west of I-5 on Rose Creek, San Diego, California.

Experience

Upon completing his Bachelors degree in International Agriculture, Mr. Oesch worked on sustainable agriculture restoration and development projects in Guatemala and Honduras. He has recently completed graduate research in hardscape urban wetland restoration modeled for Rose Creek in San Diego, California. He is currently working on a variety of habitat restoration projects at DUDEK involving freshwater marsh, salt marsh, riparian, urbanized/disturbed, chaparral, stream channel, and coastal sage scrub habitats.

Wetland Mitigation/Restoration

- **Lake Val Sereno/La Jolla Crossroads Off-Site Mitigation, Encinitas, California.** Project monitor for the La Jolla Crossroads off-site mitigation located at Lake Val Sereno. This project involves the enhancement of 5.37 acres of freshwater wetland to fulfill the requirements of agency permits ACOE NWP-12, CDFG 1601 agreement and RWQCB 401 certification. His duties include advising on the removal of exotic and invasive plant species, documenting progress of planted native plants, collecting quantitative transect data, and recommending courses of action to improve site success in meeting performance standards.
- **Famosa Slough Saltmarsh/ Sorrento Creek Dredging Mitigation, San Diego, California.** Conceptual plan author for a 0.5 acre enhancement area of saltmarsh. This enhancement is to fulfill mitigation requirements from the Sorrento Creek Maintenance Dredging performed by City of San Diego, Engineering and Capital Projects Department. This project is designed to fulfill the criteria of permits CDFG 1601 and ACOE 404. The enhancement area will include middle and lower saltmarsh plant species, bordered by a coastal sage scrub habitat buffer strip.
- **Poggi Creek Streambed Modification, Chula Vista, California.** Conceptual plan designer for a streambed erosion control project. This grade control structure design uses a low-profile, biodegradable approach to avoid being classified as "channel fill." The intended purpose is to prevent streambed scour, encourage sediment deposition, and promote native freshwater plant species establishment.

CHRISTOPHER E. OESCH
HABITAT RESTORATION SPECIALIST

- **Torrey Hills Basin Wetland Mitigation, San Diego, California.** Project monitor for site involving the creation of approximately 3 acres of wetland habitat to mitigate for impacts of the adjacent Torrey Hills housing development. His duties include advising on the removal of exotic and invasive plant species, documenting progress of planted native plants, collecting quantitative transect data, and recommending courses of action to troubleshoot hydrologic adversities in the performance of the basin's morphology.
- **Meadowbrook Villages Development Wetland Mitigation Project, Escondido, California.** Assisted in design of the stormwater detention/wetland creation basin for a retirement development. The basin created opportunity for onsite wetland mitigation as well as provided increased stormflow storage capacity along Reidy Creek to prevent flooding. He also assisted in preliminary soil sampling and biotic surveying.
- **Las Virgins Creek Hardscape Naturalization Proposal, Los Angeles, California.** Assisted in a proposal for the naturalization of a section of concrete hardscape channel along Los Virgins Creek (see thesis work). Goals of the naturalization would be to create sediment deposition sufficient to grow wetland plant species, add topography to the channel bottom and sides which would encourage a more natural hydrologic regime, and to achieve these goals while passing floodwater efficiently as to not promote flooding.
- **Vista Sorrento Parkway Alkali Marsh Mitigation Project, San Diego, California.** Biological monitor for the project. This includes collecting transect data, recommendations on weed removal and native plant mortality. The project entails creation/enhancement of 1 acre of coastal sage scrub, mulefat scrub, and salt marsh habitats as mitigation for impacts from the Caltrans ROW project.
- **Los Peñasquitos Lagoon Saltmarsh Mitigation Project, San Diego, California.** Assisted in the monitoring of native saltmarsh and coastal sage scrub habitat including transect data collection, advisement on remedial plantings, and non-native plant removal.
- **Rolling Hills Ranch Wetland Mitigation Project, Chula Vista, California.** Assisted in annual monitoring efforts and transect data collection for 2 acres of created wetland habitat. This creation area was in mitigation for the surrounding Rolling Hills Ranch housing development.
- **Green Valley Mobile Home Park Slope Stabilization Project, Vista, California.** Project monitor for stream-side mitigation project which includes freshwater marsh, riparian and disturbed habitats. This project is designed to fulfill requirements of CDFG 1603 and ACOE 404 permits. Mitigation was triggered when the mobile home park owners placed riprap along the stream banks covering freshwater marsh habitat and disturbing hydrology. His monitor duties include recommendations on weed removal, native plantings and general maintenance.

Upland Restoration/Mitigation

- **Summit Ridge Business Park Mitigation Project, San Diego, California.** Biological monitor for 10 acres of coastal sage scrub, with a 1 acre freshwater marsh component. This project is mitigation for the development of the Summit Ridge Business Park. His monitoring duties include biotic

CHRISTOPHER E. OESCH

HABITAT RESTORATION SPECIALIST

surveys, transect data collection, weed removal recommendations, and native planted species survival.

Plant Survey/ Seed Collection

- **Newhall Ranch *Chorizanthe* Seed Collection, Santa Clarita, California.** Participated with a team of biologists collecting seed of the rare and endangered *Chorizanthe perryi fernadina* (spineflower). Polygons of spineflower locations were GPSed and mapped. Teams then returned to collect seed.
- **Rose Creek/Nature School Habitat Enhancement Plan, San Diego, California.** Mapped 13 acres of the Rose Creek riparian corridor directly east I-5. Plants, and habitat locations were GPSed and a biotic survey was taken.

Agricultural Development

- **Agricultural Support/Development Project, El Peten, Guatemala.** Coordinated an agricultural support and development project for several Mayan Indigenous communities in the Peten region of Guatemala. This involved working with government officials for importation of agricultural supplies from Belize, traveling between site locations and exploring possibilities for reestablishing crops. The project was necessitated by crops lost to fire and drought.

Impact Monitoring

- **Carroll Canyon Emergency Maintenance Sewer Project, San Diego, California.** Assisted in designating access routes around sensitive habitat for Metropolitan Wastewater vehicles to gain access to sewer clean-out locations.
- **Sorrento Valley Utilities Revegetation, San Diego County, California.** Monitored work crews in the removal of non-native plant species in biologically sensitive saltmarsh, freshwater marsh, and coastal sage scrub habitats.
- **Sorrento Creek Maintenance Dredging Project, San Diego, California.** Monitored City of San Diego work crews in removal of sediment from the channel bottoms of Carroll Canyon, Los Penasquitos, and Sorrento creeks. Monitoring was to insure the least possible impacts to surrounding vegetation, aquatic and terrestrial animal habitats. The project site contained potential Clapper rail (*Rallus longirostris*) habitat, which required flushing prior to beginning work in the channel areas. His duties also included, water samples taken daily and tested for total suspended solids (TSS) to ensure that discharge downstream of the project met TSS level requirements.
- **Tecolote Canyon Tree-of-Heaven Removal Project, San Diego, California.** Monitored work crews in removal of tree-of-heaven (*Ailanthus altissima*) and other exotics from a section of Tecolote Canyon. His monitoring duties included advisement of routes of least impact to surrounding native habitats, felling trees, and cut biomass dispersal.

Education

B.S., Marine Science, Jacksonville University, Jacksonville, Florida (1996)

Experience

Ms. Serrano has a diverse range of work experience in the biological sciences, with an emphasis in marine biology, oceanography, and coastal ecology. Her eight years of experience includes marine science education, marine ecotourism/expedition leadership, research aboard seagoing vessels, biological resource monitoring, rare plant surveys, wildlife surveys and construction monitoring. She has performed field work in environmentally sensitive areas throughout San Diego, Orange, Los Angeles, Ventura, and San Bernardino Counties of Southern California. Ms. Serrano has been at Dudek and Associates since June 2004.

Previous Experience

- **Performed research and field work for a project involving marine mammal population impacts on the San Diego area sportfishing industry – California Department of Fish and Game, San Diego, California.** Monitored/collected biological and geographical account data at sea aboard public sportfishing charter vessels throughout San Diego County nearshore waters. Public involvement in a controversial project. Study's purpose was prompted by pressure from sportfishing industry to propose an amendment to the Marine Mammal Protection Act in order to discourage pinniped fish predation near fishing boats.
- **Instructor of marine science, geology, and chaparral ecology of Southern California – Ocean Institute, Dana Point, California.** Taught marine biology and oceanography using field techniques at sea aboard research vessel, in onshore wet lab, on Catalina Island, and within the Dana Point Marine Life Refuge for visiting elementary to college-level students. Taught geology and chaparral ecology in the Ortega Mountains of Orange County.

Biological Monitoring

- **Southern California Edison Bark Beetle Hazardous Tree Removal Project, San Bernardino Mountains, California.** Biological resources and construction monitoring during major tree removal project along power lines throughout San Bernardino County. Monitoring all phases of logging work for adherence to federal and state laws regarding sensitive species and wetlands issues.

Sensitive Biological Resource Surveys

- **Southern California Edison Bark Beetle Hazardous Tree Removal Project, San Bernardino Mountains, California.** Assisted with diurnal and nocturnal surveys for sensitive amphibian species in selected drainages within the San Bernardino Mountains. The surveys supported suitable and potential habitat data for maps used to identify environmentally sensitive areas within the SCE Bark Beetle Project.

Rare Plant Surveys

- **Newhall Land and Farming Company Development Project, Newhall, California.** Assisted with botanical surveys, general sensitive plant surveys, and focused rare plant surveys for the state-

SPARROW SERRANO
ENVIRONMENTAL ANALYST/BIOLOGIST

listed endangered San Fernando Valley spineflower on Newhall Land and Farming Company parcels totaling 16,500 acres in Los Angeles and Ventura Counties. Assisted in preparation of final reports included in project.

Wildlife Surveys/Vegetation Mapping

- **Warner Ranch Development Project, Pala, California.** As project manager, conducted general wildlife surveys and created a vegetation map of a 421-acre parcel for a proposed residential development project in the northeastern portion of San Diego County.

Research and Report Preparation

- **Upper Santa Ana River Habitat Conservation Plan, San Bernardino County Water Conservation District, Cities of Redlands and Highlands and County of San Bernardino, California.** Prepared an HCP for a multi-purpose project including mining activities, infrastructure improvements (*i.e.*, roadways and utilities), recreational trails, groundwater recharge basins and flood control activities along the Upper Santa Ana River. Species include coastal California gnatcatcher, least Bell's vireo, slender-horned spineflower, and Santa Ana River woollystar. Prepared a biological resources technical report in support of the EIR/EIS. The San Bernardino County Valley Water Conservation District is the lead CEQA agency and the Bureau of Land Management is the lead NEPA agency.

APPENDIX C
California Natural Diversity
DATA Base Forms

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. PLEASE
ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence# _____
Copy Sent To _____	

Scientific name (no codes): *Calochortus clavatus* var. *gracilis*

Reporter: Scott Boczkiewicz, David Flietner, Chris Oesch, Sparrow Serrano, Colin Khoury, Kam Muri, Michelle Balk, Rebekah Krebs

Phone: (760) 942.5147

Address: Dudek & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: April 19-21, 25 - 28, 2005 County: Los Angeles Collection: no If yes, # Mus./Herb:

Location: **Northern Santa Susana Mountains: Entrada site (formerly Magic Mountain Entertainment site); south of the Santa Clara River, east/south of Airport Mesa and adjacent mesas, west of Interstate 5.**

Quad Name: Newhall 7½' 15' Elevation: **1075-1250'** T **4N** R **16W** W ¼ of ¼ Sec

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? Yes No If not, reason:

Is this a new location record? Yes No Unknown

Total # of Individuals = **~3,900** Is this a subsequent visit? Yes No Compared to your last visit: more same fewer

Phenology (plants): % vegetative % flowering % fruiting

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

California sagebrush-purple sage with *Artemisia californica*. *Eriogonum fasciculatum*. *Salvia leucophylla*. *Ericameria palmeri* var. *pachypus*, *Bloomeria crocea*, *Clarkia purpurea*, *Lotus strigosus*; variety of aspects, slopes 0 - 50%; sandy clay loam soils.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: **Current Land Use: vacant: Visible Disturbances: cattle grazing, grading/clearing beside Magic Mtn Theme Park for fireworks, utility access roads; Possible Threats: proposed residential/commercial development, utility access roads.**

Overall Site Quality: Excellent Good Fair Poor

Comments: **Plants were distributed within numerous polygons throughout the site.**

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

Keyed in a site reference:

Compared with specimen housed at:

Compared with photo/drawing in:

By another person (name):

Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

Plant/Animal Slide

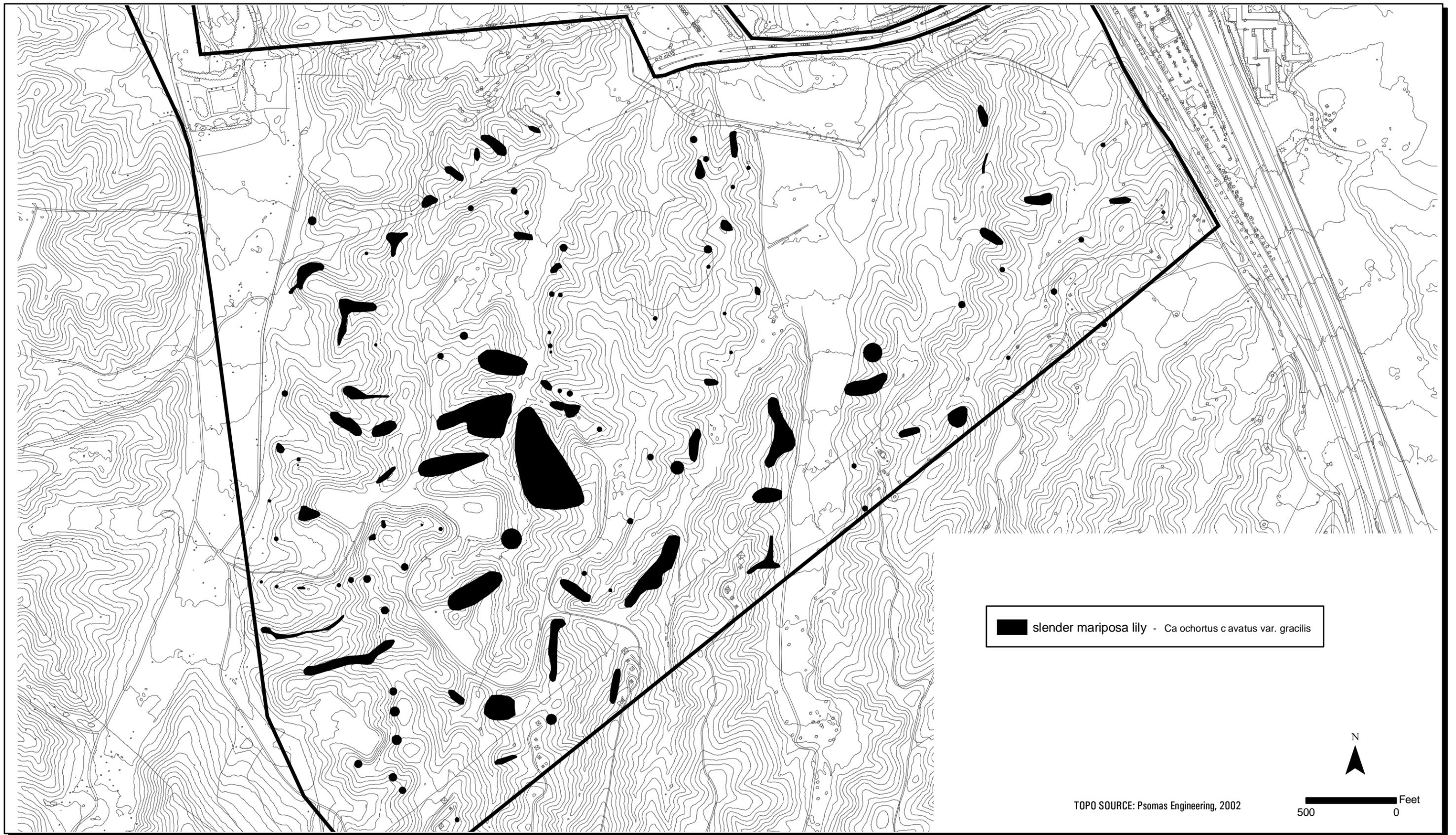
Habitat Print

Diagnostic Feature

Other

May we obtain duplicates **at our cost?**

Yes No



Entrada
2005 Sensitive Plant Survey Results

FIGURE
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
USE THE BACK FOR COMMENTS IF NECESSARY. PLEASE
ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence# _____
Copy Sent To _____	

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Michelle Balk, David Flietner, Colin Khoury, Chris Oesch, and Rebekah Krebs

Phone: (760) 942.5147

Address: Dudek & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: April 27 & 28, 2005

County: Los Angeles

Collection: no

If yes, #

Mus./Herb:

Location: Northern Santa Susana Mountains; Entrada site (formerly Magic Mountain Entertainment site); south of the Santa Clara River, east/south of Airport Mesa and adjacent mesas, west of Interstate 5.

Quad Name: Newhall X 7½' 15' Elevation: 1075-1250' T 4N R 16W W ¼ of ¼ Sec

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? Yes X No Unknown

Total # of Individuals = ~306660 Is this a subsequent visit? X Yes No Compared to your last visit: more same X fewer

Phenology (plants): % vegetative 100 % flowering % fruiting

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Predominantly California grassland series with coastal sage/California buckwheat series, also present. The majority of plants occur on southeast slopes, with plants also on southwest, west, south, and east-facing slopes. Slopes average 20%. Dominant plants at these occurrences include *Chaenactis glabriuscula*, *Bromus* spp., *Castilleja exserta*, and *Avena* spp.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, utility access road; Visible Disturbances: cattle grazing, farming, grading/clearing, utility access road; Possible Threats: proposed residential/commercial development, utility access road maintenance.

Overall Site Quality: Excellent Good X Fair Poor

Comments: This report summarizes 17 discrete locations, each with from 1 to an estimated 170,000 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

 Keyed in a site reference:

 Compared with specimen housed at: UCR

 Compared with photo/drawing in:

 By another person (name): Andy Sanders

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject

Type

 Plant/Animal

 Slide

 Habitat

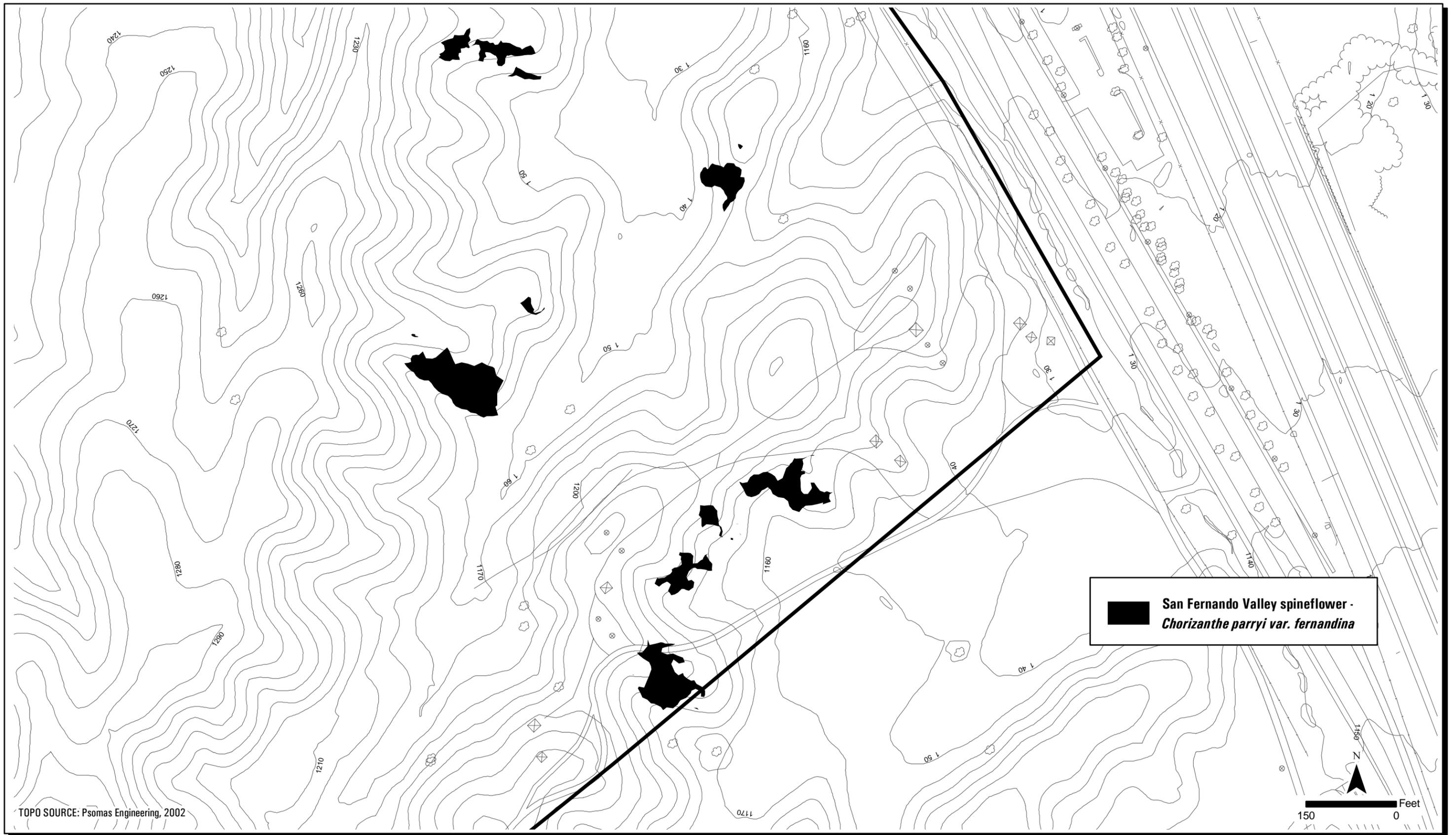
 Print

 Diagnostic Feature

 Other

May we obtain duplicates **at our cost**?

 Yes X No



Entrada
2005 San Fernando Valley spineflower Results

FIGUR
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

PLEASE ENTER ALL INFORMATION AVAILABLE TO YOU.
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ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence# _____
Copy Sent To _____	

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Colin Khoury, Kam Muri, David Flietner, Rebekah Krebs, Chris Oesch

Phone: (760) 942.5147

Address: Dudek & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: April 21,26,27, 2005 County: Los Angeles Collection: no If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains; Entrada site (formerly Magic Mountain Entertainment site); south of the Santa Clara River, east/south of Airport Mesa and adjacent mesas, west of Interstate 5.

Quad Name: Newhall 7½' 15' Elevation: _____' T 4N R 16W W ¼ of ¼ Sec

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? Yes No If not, reason:

Is this a new location record? Yes No Unknown

Total # of Individuals = ~176,800 Is this a subsequent visit? Yes No Compared to your last visit: more same fewer

Phenology (plants): % vegetative 100 % flowering % fruiting

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Predominantly California sagebrush, with some found in big sagebrush and California grasslands. Most (95,000) plants in opening in sagebrush, on flat ground. Other plants occurred on up to 20% slopes, with a variety of aspects. Clay loam soils predominate. Associated species in most cases were non-native forbs and grasses. such as *Lepidium* sp., *Bromus hordacous*, and *Erodium cicutarium*.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: vacant; Visible Disturbances: cattle grazing, erosion; Possible Threats: proposed residential/commercial development, utility access road maintenance, erosion control.

Overall Site Quality: Excellent Good Fair Poor

Comments: This report summarizes 6 discrete locations, each with from 55 to an estimated 93,000 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

Keyed in a site reference:

Compared with specimen housed at:

Compared with photo/drawing in:

By another person (name):

Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

Plant/Animal Slide

Habitat Print

Diagnostic Feature

Other

May we obtain duplicates at our cost?

Yes No



TOPO SOURCE: Psomas Engineering, 2002

Entrada
2005 San Fernando Valley spineflower Results

FIGUR
1

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

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USE THE BACK FOR COMMENTS IF NECESSARY. PLEASE
ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence# _____
Copy Sent To _____	

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Scott Boczkiewicz, Sparrow Serrano, Colin Khoury, Kam Muri

Phone: (760) 942.5147

Address: Dudek & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: April 20, 2005 County: Los Angeles Collection: no If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains; Entrada site (formerly Magic Mountain Entertainment site); south of the Santa Clara River, east/south of Airport Mesa and adjacent mesas, west of Interstate 5.

Quad Name: Newhall 7½' 15' Elevation: 1075-1250' T 4N R ? W W ¼ of ? ¼ Sec?

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? Yes No If not, reason:

Is this a new location record? Yes No Unknown

Total # of Individuals = ~70,370 Is this a subsequent visit? Yes No Compared to your last visit: more same fewer

Phenology (plants): % vegetative 100 % flowering % fruiting

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

Predominantly California sagebrush, with *Eriogonum californicum*, *Chaenactis glabnscula*, and *Schismus barbatus* dominants. Soils are mostly silt loam, on south, southeast, and southwest slopes of generally 5 to 30%.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, farming, grading/clearing; Possible Threats: proposed residential/commercial development.

Overall Site Quality: Excellent Good Fair Poor

Comments: This report summarizes 5 discrete locations, each with from 60 to 61,000 individuals observed.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

Keyed in a site reference:

Compared with specimen housed at:

Compared with photo/drawing in:

By another person (name):

Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

Plant/Animal Slide

Habitat Print

Diagnostic Feature

Other

May we obtain duplicates **at our cost**?

Yes No

CALIFORNIA NATIVE SPECIES FIELD SURVEY FORM

OFFICE USE ONLY

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USE THE BACK FOR COMMENTS IF NECESSARY. PLEASE
ATTACH OR DRAW A MAP ON BACK.

Document Code _____	Quad Code _____
Index Code _____	Occurrence# _____
Copy Sent To _____	

Scientific name (no codes): *Chorizanthe parryi* var. *fernandina*

Reporter: Kamarual Muri and Colin Khoury Phone: (760) 942.5147

Address: Dudek & Associates, 605 Third Street, Encinitas, CA 92024

Date of Field Work: April 18, 2005 County: Los Angeles Collection: no If yes, # Mus./Herb:

Location: Northern Santa Susana Mountains, Newhall Ranch, southeast of confluence of the Santa Clara River and Castaic Creek, east edge of Airport Mesa directly west of Magic Mtn Theme Park. This polygon is part of the Airport Mesa metapopulation which; the remainder of the data for the Airport Mesa metapopulation will be reported on another form.

Quad Name: Newhall X 7½' 15' Elevation: ~1,150' T 4N R 16W E ¼ of ¼ Sec

Landowner/Manager: Newhall Land, 23823 Valencia Boulevard, Valencia, CA 91355

Species Found? X Yes No If not, reason:

Is this a new location record? Yes X No Unknown

Total # of Individuals = 210,690 Is this a subsequent visit? X Yes No Compared to your last visit: X more same fewer

Phenology (plants): % vegetative 100 % flowering % fruiting

Population Age Structure (animals): # adults # juveniles # others

Site Function for Species (animals): breeding foraging wintering roosting denning other

Habitat Description (plant communities, dominants, associates, other rare spp., substrate/soils, aspect/slope):

California sagebrush, black sage series, dominated by *Bromus* spp, *Eriogonum fasciculatum*, and *Erodium cicutarium*. Plants occur on south-facing 15% slope with sandy loam soil.

Current Land Use/Visible Disturbances/Possible Threats: Current Land Use: Cattle grazing, farming; Visible Disturbances: cattle grazing, farming; Possible Threats: proposed residential/commercial development.

Overall Site Quality: Excellent X Good Fair Poor

Comments: This report summarizes a single location.

Should/Could this site be protected? How?

Other comments:

DETERMINATION (Check one or more, fill in blanks)

 Keyed in a site reference:

 Compared with specimen housed at:

 Compared with photo/drawing in:

 By another person (name):

X Other: personal knowledge

OTHER KNOWLEDGEABLE INDIVIDUALS (Name/Address/Phone)

PHOTOGRAPHS (Check one or more)

Subject _____ Type _____

 Plant/Animal _____ Slide _____

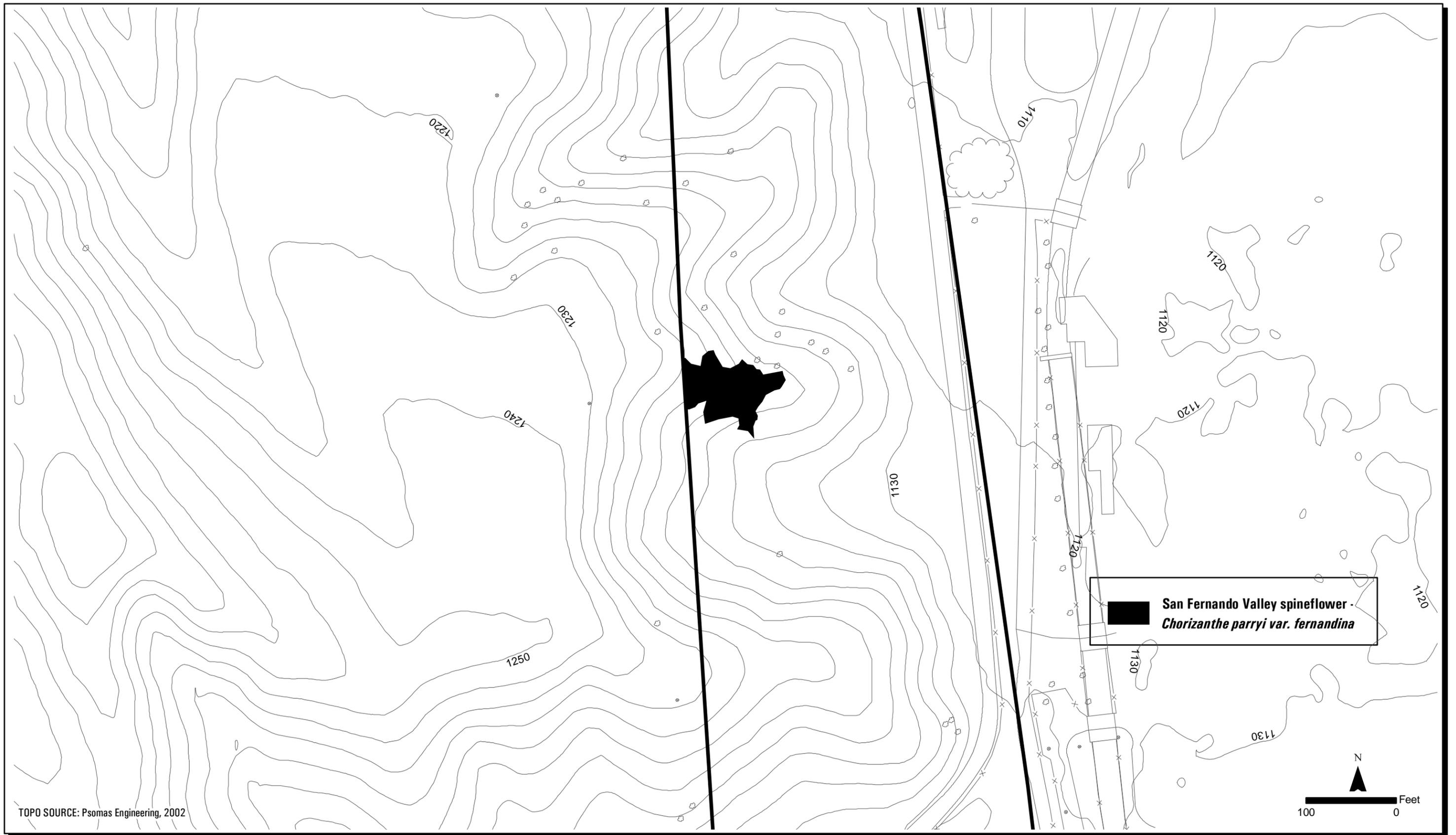
 Habitat _____ Print _____

 Diagnostic Feature _____

 Other _____

May we obtain duplicates **at our cost**?

 Yes X No



TOPO SOURCE: Psomas Engineering, 2002

**San Fernando Valley spineflower -
Chorizanthe parryi var. *fernandina***

N
100 0 Feet

Entrada
2005 San Fernando Valley spineflower Results **FIGURE 1**

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